



element

Motorola Solutions, Inc.

V700

FCC 15.247:2022

RSS-247 Issue 2:2017

Bluetooth Low Energy (DTS) Radio

Report: WTVD0085.6 Rev. 3, Issue Date: June 27, 2023



This report must not be used to claim product certification, approval, or endorsement by A2LA or any agency of the U.S. Government. This Report shall not be reproduced, except in full without written approval of the laboratory.

CERTIFICATE OF TEST

Last Date of Test: April 25, 2023
Motorola Solutions, Inc.
EUT: V700

Test Lab Location:

Labs TX01-09
 3801 E Plano Pkwy
 Plano, TX 75074
 FCC Designated Number: US1294, Location Registration Number: 561783
 ISED Designated number: 2834G-1

Radio Equipment Testing

Standards

Specification	Method
FCC 15.247:2023	ANSI C63.10:2013, FCC KDB 558074 v05r02:2019
RSS-247 Issue 2:2017, RSS-Gen Issue 5:2018+A1:2019+A2:2021	

Results

Test Description	Result	FCC Section(s)	RSS Section(s)	ANSI C63.10 Section(s)	Comments
Powerline Conducted Emissions	N/A	15.207	RSS-Gen 8.8	6.2	Not required for a battery powered EUT.
Occupied Bandwidth (99%)	Pass	KDB 558074 - 2.1	RSS-Gen 6.7	6.9.3	
Duty Cycle	Pass	KDB 558074 - 6.0	RSS-Gen 3.2	11.6	
DTS Bandwidth (6 dB)	Pass	15.247(a)(2), KDB 558074 - 8.2	RSS-247 5.2(a)	11.8.2	
Equivalent Isotropic Radiated Power	Pass	15.247(b)(3), KDB 558074 - 8.3.1	RSS-247 5.4(d, f), RSS-Gen 6.12	11.9.1.1	
Output Power	Pass	15.247(b)(3), KDB 558074 - 8.3.1	RSS-247 5.4(d, f), RSS-Gen 6.12	11.9.1.1	
Power Spectral Density	Pass	15.247(e), KDB 558074 -8.4	RSS-247 5.2(b)	11.10.2	
Band Edge Compliance	Pass	15.247(d), KDB 558074 -8.5	RSS-247 5.5	11.11	
Spurious Conducted Emissions	Pass	15.247(d), KDB 558074 -8.5	RSS-247 5.5	11.11	
Spurious Radiated Emissions	Pass	15.247(d), KDB 558074 - 8.6, 8.7	RSS-247 5.5, RSS-Gen 6.13, 8.10	11.12.1, 11.13.2, 6.5, 6.6	

Product compliance is the responsibility of the client; therefore, the tests and equipment modes of operation represented in this report were agreed upon by the client, prior to testing. The results of this test pertain only to the sample(s) tested. The specific description is noted in each of the individual sections of the test report supporting this certificate of test. This report reflects only those tests from the referenced standards shown in the certificate of test. It does not include inspection or verification of labels, identification, marking or user information. As indicated in the Statement of Work sent with the quotation, Element's standard process is to always use the latest published version of the test methods even when earlier versions are cited in the test specification. Issuance of a purchase order was de facto acceptance of this approach. Otherwise, the client would have advised Element in writing of the specific version of the test methods they wanted applied to the subject testing.

CERTIFICATE OF TEST



Deviations From Test Standards

None

Approved By:

Adam Bruno, Operations Manager

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REVISION HISTORY



Revision Number	Description	Date (yyyy-mm-dd)	Page Number
01	Updated configurations.	2023-06-13	14, 15
	Updated power settings and antennas table.	2023-06-13	13
02	Added FCC ID, IC ID, applicant address to Product Description page.	2023-06-26	11
03	Updated IC ID to just IC.	2023-06-27	11
	Added model number table to Product Description page.	2023-06-27	12
	Added test lab information to certificate of test.	2023-06-27	2

ACCREDITATIONS AND AUTHORIZATIONS



United States

FCC - Designated by the FCC as a Telecommunications Certification Body (TCB). Certification chambers, Open Area Test Sites, and conducted measurement facilities are listed with the FCC.

A2LA - Each laboratory is accredited by A2LA to ISO / IEC 17025, and as a product certifier to ISO / IEC 17065 which allows Element to certify transmitters to FCC and IC specifications.

Canada

ISED - Recognized by Innovation, Science and Economic Development Canada as a Certification Body (CB) and as a CAB for the acceptance of test data.

European Union

European Commission – Recognized as an EU Notified Body validated for the EMCD and RED Directives.

United Kingdom

BEIS – Recognized by the UK as an Approved Body under the UK Radio Equipment and UK EMC Regulations.

Australia/New Zealand

ACMA - Recognized by ACMA as a CAB for the acceptance of test data.

Korea

MSIT / RRA - Recognized by KCC's RRA as a CAB for the acceptance of test data.

Japan

VCCI - Associate Member of the VCCI. Conducted and radiated measurement facilities are registered.

Taiwan

BSMI – Recognized by BSMI as a CAB for the acceptance of test data.

NCC - Recognized by NCC as a CAB for the acceptance of test data.

Singapore

IDA – Recognized by IDA as a CAB for the acceptance of test data.

Israel

MOC – Recognized by MOC as a CAB for the acceptance of test data.

Hong Kong

OFCA – Recognized by OFCA as a CAB for the acceptance of test data.

Vietnam

MIC – Recognized by MIC as a CAB for the acceptance of test data.

SCOPE

For details on the Scopes of our Accreditations, please visit:

[California](#)

[Minnesota](#)

[Oregon](#)

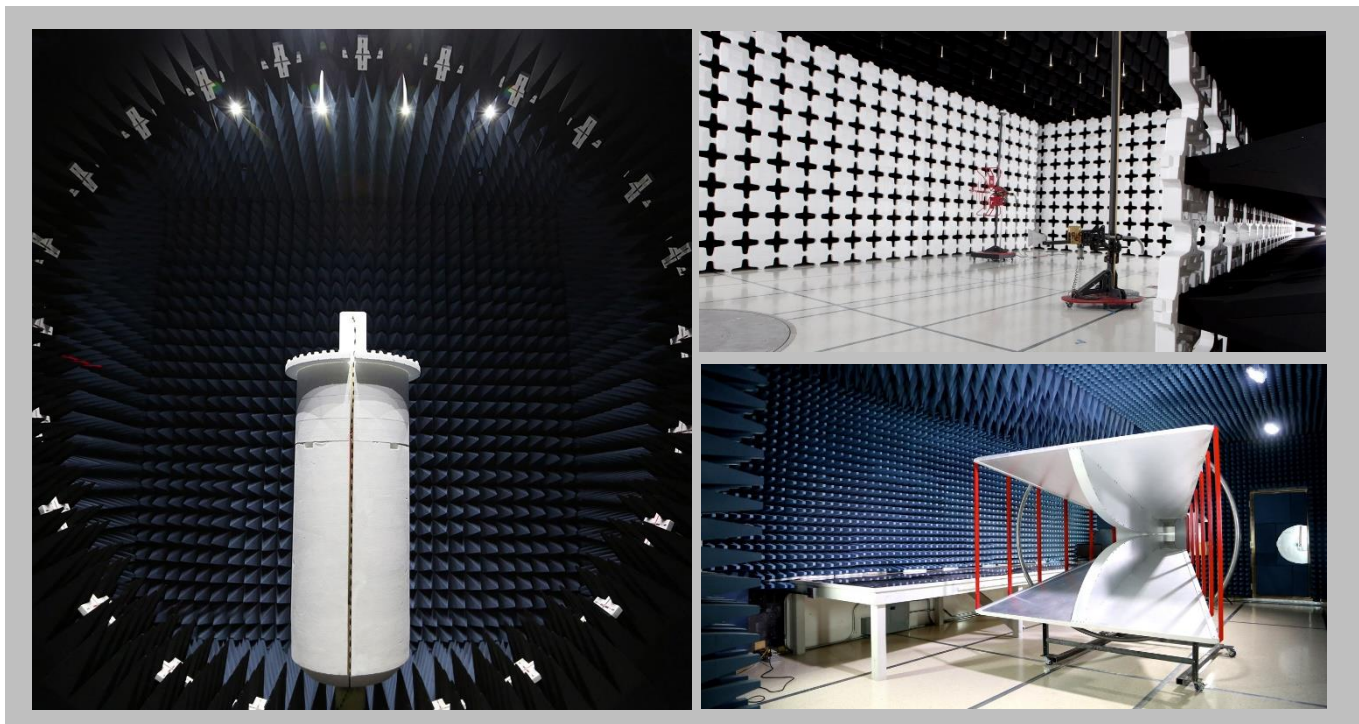
[Texas](#)

[Washington](#)

FACILITIES



California Labs OC01-17 41 Tesla Irvine, CA 92618 (949) 861-8918	Minnesota Labs MN01-11 9349 W Broadway Ave. Brooklyn Park, MN 55445 (612)-638-5136	Oregon Labs EV01-12 6775 NE Evergreen Pkwy #400 Hillsboro, OR 97124 (503) 844-4066	Texas Labs TX01-09 3801 E Plano Pkwy Plano, TX 75074 (469) 304-5255	Washington Labs NC01-05 19201 120 th Ave NE Bothell, WA 98011 (425)984-6600
A2LA				
Lab Code: 3310.04	Lab Code: 3310.05	Lab Code: 3310.02	Lab Code: 3310.03	Lab Code: 3310.06
Innovation, Science and Economic Development Canada				
2834B-1, 2834B-3	2834E-1, 2834E-3	2834D-1	2834G-1	2834F-1
BSMI				
SL2-IN-E-1154R	SL2-IN-E-1152R	SL2-IN-E-1017	SL2-IN-E-1158R	SL2-IN-E-1153R
VCCI				
A-0029	A-0109	A-0108	A-0201	A-0110
Recognized Phase I CAB for ISED, ACMA, BSMI, IDA, KCC/RRA, MIC, MOC, NCC, OFCA				
US0158	US0175	US0017	US0191	US0157



MEASUREMENT UNCERTAINTY



Measurement Uncertainty

When a measurement is made, the result will be different from the true or theoretically correct value. The difference is the result of tolerances in the measurement system that cannot be completely eliminated. To the extent that technology allows us, it has been our aim to minimize this error. Measurement uncertainty is a statistical expression of measurement error qualified by a probability distribution.

A measurement uncertainty estimation has been performed for each test per our internal quality document QM205.4.6. The estimation is used to compare the measured result with its "true" or theoretically correct value. The expanded measurement uncertainty (K=2) can be found in the table below. A lab specific value may also be found in the applicable test description section. Our measurement data meets or exceeds the measurement uncertainty requirements of the applicable specification; therefore, the test data can be compared directly to the specification limit to determine compliance. The calculations for estimating measurement uncertainty are based upon ETSI TR 100 028 (or CISPR 16-4-2 as applicable), and are available upon request.

The following table represents the Measurement Uncertainty (MU) budgets for each of the tests that may be contained in this report.

Test	+ MU	- MU
Frequency Accuracy	0.0007%	-0.0007%
Amplitude Accuracy (dB)	1.2 dB	-1.2 dB
Conducted Power (dB)	1.2 dB	-1.2 dB
Radiated Power via Substitution (dB)	0.7 dB	-0.7 dB
Temperature (degrees C)	0.7°C	-0.7°C
Humidity (% RH)	2.5% RH	-2.5% RH
Voltage (AC)	1.0%	-1.0%
Voltage (DC)	0.7%	-0.7%
Field Strength (dB)	5.1 dB	-5.1 dB
AC Powerline Conducted Emissions (dB)	3.1 dB	-3.1 dB

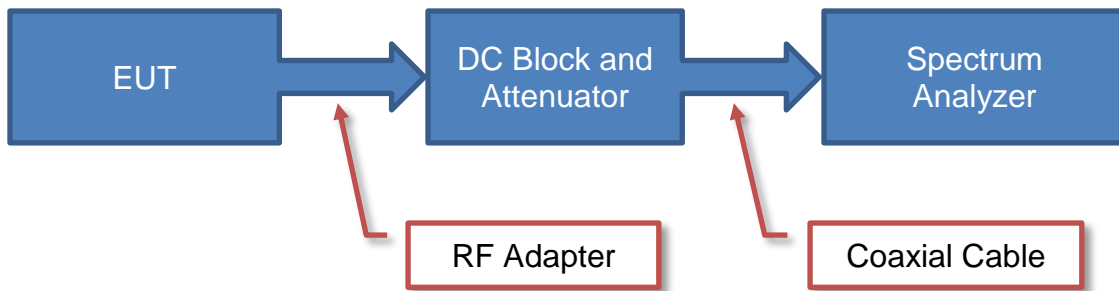
TEST SETUP BLOCK DIAGRAMS

Measurement Bandwidths

Frequency Range (MHz)	Peak Data (kHz)	Quasi-Peak Data (kHz)	Average Data (kHz)
0.01 - 0.15	1.0	0.2	0.2
0.15 - 30.0	10.0	9.0	9.0
30.0 - 1000	100.0	120.0	120.0
Above 1000	1000.0	N/A	1000.0

Unless otherwise stated, measurements were made using the bandwidths and detectors specified. No video filter was used.

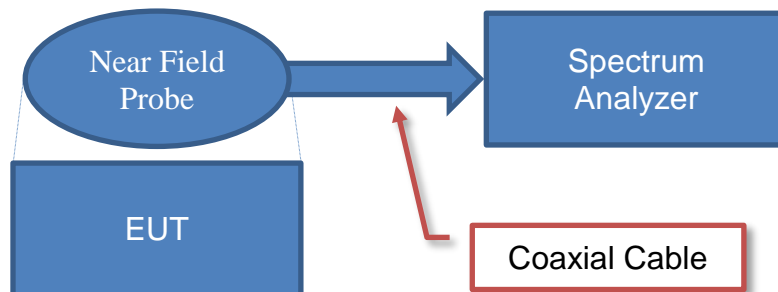
Antenna Port Conducted Measurements



Sample Calculation (logarithmic units)

Measured Value	=	Measured Level	+	Reference Level Offset
71.2		42.6		28.6

Near Field Test Fixture Measurements

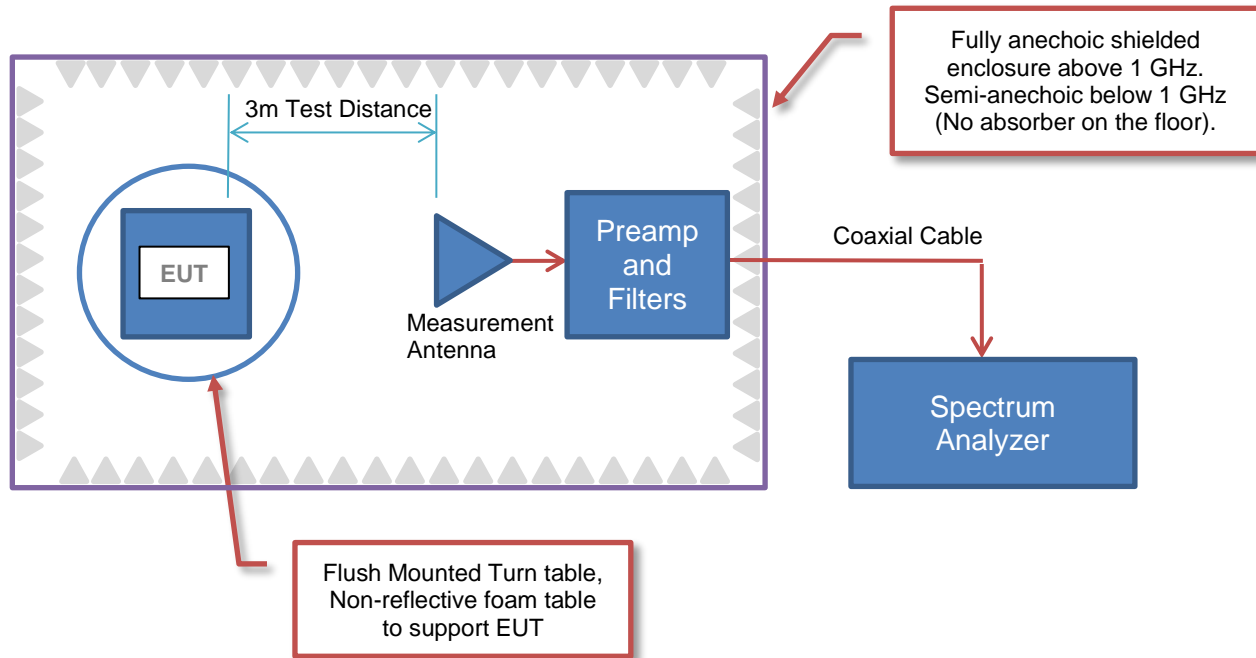


Sample Calculation (logarithmic units)

Measured Value	=	Measured Level	+	Reference Level Offset
71.2		42.6		28.6

TEST SETUP BLOCK DIAGRAMS

Emissions Measurements



Sample Calculation (logarithmic units)

Radiated Emissions:

Measured Level (Amplitude)	Factor			Distance Adjustment Factor	External Attenuation	Field Strength
	Antenna Factor	Cable Factor	Amplifier Gain			
42.6	28.6	3.1	40.8	0.0	0.0	33.5

42.6 + 28.6 + 3.1 - 40.8 + 0.0 + 0.0 = 33.5

Conducted Emissions:

Measured Level (Amplitude)	Factor		External Attenuation	Adjusted Level
	Transducer Factor	Cable Factor		
26.7	0.3	0.1	20.0	47.1

26.7 + 0.3 + 0.1 + 20.0 = 47.1

Radiated Power (ERP/EIRP) – Substitution Method:

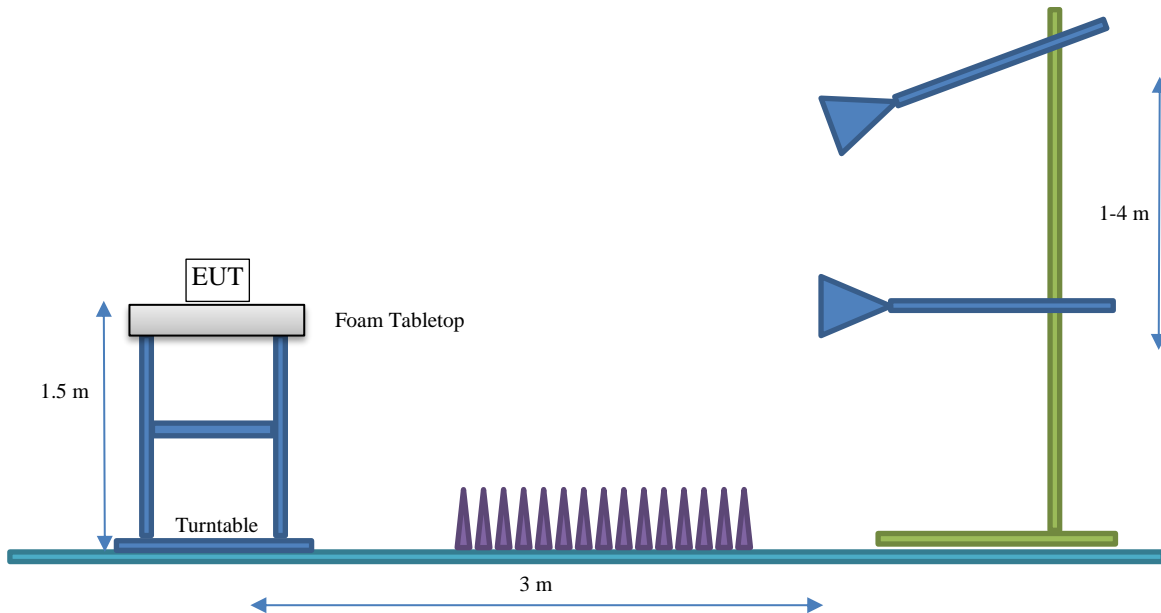
Measured Level into Substitution Antenna (Amplitude dBm)	Substitution Antenna Factor (dBi)	EIRP to ERP (if applicable)	Measured power (dBm ERP/EIRP)
10.0	6.0	2.15	13.9/16.0

10.0 + 6.0 - 2.15 = 13.9/16.0

TEST SETUP BLOCK DIAGRAMS

Bore Sighting (>1GHz)

The diameter of the illumination area is the dimension of the line tangent to the EUT formed by 3 dB beamwidth of the measurement antenna at the measurement distance. At a 3 meter test distance, the diameter of the illumination area was 3.8 meters at 1 GHz and greater than 2.1 meters up to 6 GHz. Above 1 GHz, when required by the measurement standard, the antenna is pointed for both azimuth and elevation to maintain the receive antenna within the cone of radiation from the EUT. The specified measurement detectors were used for comparison of the emissions to the peak and average specification limits.



PRODUCT DESCRIPTION



Client and Equipment under Test (EUT) Information

Company Name:	Motorola Solutions, Inc.
Manufacturer Address:	415 East Exchange Parkway
City, State, Zip:	Allen, TX 75002
Applicant Name:	Motorola Solutions, Inc.
Applicant Address:	8000 W. Sunrise Blvd
City, State, Zip:	Plantation, FL 33322
Test Requested By:	Navaid Karimi
EUT:	V700
First Date of Test:	December 22, 2022
Last Date of Test:	April 25, 2023
Receipt Date of Samples:	December 21, 2022
Equipment Design Stage:	Production
Equipment Condition:	No Damage
Purchase Authorization:	Verified

Information Provided by the Party Requesting the Test

Functional Description of the EUT:
Body Worn Camera with BT/BLE, Wi-Fi and LTE
Testing Objective:
To demonstrate compliance of the Bluetooth Low Energy (DTS) radio to FCC 15.247 requirements. To demonstrate compliance of the Bluetooth Low Energy (DTS) radio to RSS-247 requirements.
FCC ID:
AZ499FT7164
IC:
109U-99FT7164

PRODUCT DESCRIPTION



Models and Descriptions:

FCC/ISED details for common reports – Please note tested one highlighted in yellow

FCC Model Number	ISED Model Number (HVIN)	Product Name (PMN)	Description
WGA00735	NA	V700	V700, BWC, 1080P, FN LTE, W/Rem Batt
WGA00725	NA	V700	V700, BWC, 1080P, VzW LTE, W/Rem Batt - USA (Verizon)
NA	WGA00745	V700	V700, BWC, 1080P, BELL LTE, W/Rem Batt Canada (Bell)
WGA00755	WGA00755	V700	BWC, 1080P, WIFI ONLY
NA	WGA00825	V700	V700, BWC, 1080P, BELL READY, W/Rem BATT- Canada (Bell)
WGA00925	NA	V700	V700, BWC, 1080P, FN LTE, W/Rem Batt - USA (AT&T-first net)
WGA01025	NA	V700	V700, BWC, 1080P, FN READY, W/Rem BATT - USA (AT&T-first net)

Note:

All Models are the same the only difference in the label. No hardware, mechanical or software change. The difference is due to offering to different customers. The model can be selected by configuration. All models (except WGA00755) are different by Carrier’s which require the Carrier’s SIM card. WGA00755 – includes only the WIFI and BT, no SIM and no Carrier WIFI 2.4GHz and BT do not transmit at the same time.

POWER SETTINGS AND ANTENNAS



The power settings, antenna gain value(s) and cable loss (if applicable) used for the testing contained in this report were provided by the customer and will affect the validity of the results. Element assumes no responsibility for the accuracy of this information. The power settings below reflect the maximum power that the EUT is allowed to transmit at during normal operation.

ANTENNA GAIN (dBi)

Antenna Label	Provided by:	Frequency Range	Gain (dBi)
ILA Type Metal Internal Antenna	Motorola Solutions Inc.	2402 – 2480 MHz	2.7

The EUT was tested using the power settings provided by the manufacturer which were based upon:

- Test software settings Test software/firmware installed on EUT: _____
 Rated power settings

SETTINGS FOR ALL TESTS IN THIS REPORT

Modulation Types / Data Rates	Type	Channel	Frequency (MHz)	Power Setting
BLE GFSK	DTS	0 or 37	2402	
		20 or 18	2442	
		39	2480	

CONFIGURATIONS



Configuration WTVD0085-1

Software/Firmware Running During Test	
Description	Version
V700 WiFi FCC Test Firmware	20221215205940
V700 BLE and BT Test Firmware	20221201210101
FVIN	1.0.0.56

EUT			
Description	Manufacturer	Model/Part Number	Serial Number
V700 Conducted Unit (LTE)	Motorola Solutions, Inc.	V700	BWL7-000968

Peripherals in Test Setup Boundary			
Description	Manufacturer	Model/Part Number	Serial Number
Laptop	HP	HP ZBOOK POWER G7	5CD145HL94
Laptop Brick	HP	TPN-CA11	9900000005084
USB Serial Board	Motorola Solutions, Inc.	WGA0707	None

Cables					
Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2
USB 2.0 A to B Cable	Yes	1.8m	No	Laptop	V700 Dock
USB 2.0 A to DB9 Cable	Yes	1.8m	No	Laptop	USB to Serial Board
Ribbon Cable	No	0.15m	No	V700 Conducted Unit	USB Serial Board

CONFIGURATIONS



Configuration WTVD0086- 1

Software/Firmware Running During Test	
Description	Version
V700 WiFi FCC Test Firmware	20221215205940
V700 BLE and BT Test Firmware	20221201210101
FVIN	1.0.0.56

EUT			
Description	Manufacturer	Model/Part Number	Serial Number
V700 Radiated Unit	Motorola Solutions, Inc.	V700	BWL7-000539

Peripherals in Test Setup Boundary			
Description	Manufacturer	Model/Part Number	Serial Number
V700 Dock	Motorola Solutions, Inc.	UB02	UB02-028046
Laptop	HP	HP ZBOOK POWER G7	5CD145HL94
Laptop Brick	HP	TPN-CA11	9900000005084
USB Serial Board	Motorola Solutions, Inc.	WGA0707	None
V700 Power Supply	GlobTek, Inc.	GT-21089-1512-W3	708845150/21

Cables					
Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2
USB 2.0 A to B Cable	Yes	1.8m	No	Laptop	V700 Dock

MODIFICATIONS



Equipment Modifications

Item	Date	Test	Modification	Note	Disposition of EUT
1	2022-12-22	Spurious Radiated Emissions	Tested as delivered to test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Element following the test.
2	2023-04-25	DTS Bandwidth	Tested as delivered to test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Element following the test.
3	2023-04-25	Occupied Bandwidth	Tested as delivered to test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Element following the test.
4	2023-04-25	Output Power	Tested as delivered to test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Element following the test.
5	2023-04-25	Equivalent Isotropic Radiated Power (EIRP)	Tested as delivered to test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Element following the test.
6	2023-04-25	Power Spectral Density	Tested as delivered to test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Element following the test.
7	2023-04-25	Band Edge Compliance	Tested as delivered to test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Element following the test.
8	2023-04-25	Spurious Conducted Emissions	Tested as delivered to test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Element following the test.
9	2023-04-25	Duty Cycle	Tested as delivered to test Station.	No EMI suppression devices were added or modified during this test.	Scheduled testing was completed.

DUTY CYCLE



XMI: 2023.02.14.0

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Attenuator	Fairview Microwave	SA4018-20	TYE	2022-09-13	2023-09-13
Block - DC	Fairview Microwave	SD3239	ANE	2023-02-16	2024-02-16
Generator - Signal	Agilent	N5173B	TIW	2020-07-17	2023-07-17
Analyzer - Spectrum Analyzer	Agilent	N9010A	AFL	2023-03-17	2024-03-17
Cable	Micro-Coax	UFD150A-1-0720-200200	TXG	2022-12-08	2023-12-08

TEST DESCRIPTION

The measurement was made using a direct connection between the RF output of the EUT and a spectrum analyzer.

The Duty Cycle (x) of the single channel operation of the radio as controlled by the provided test software was measured for each of the EUT operating modes.

There is no compliance requirement to be met by this test, so therefore no Pass / Fail criteria.

The measurements were made using a zero span on the spectrum analyzer to see the pulses in the time domain. The transmit power was set to its default maximum.

The duty cycle was calculated by dividing the transmission pulse duration (T) by the total period of a single on and total off time.

If the transmit duty cycle < 98 percent, burst gating may have been used during some of the other tests in this report to only take the measurement during the burst duration.

DUTY CYCLE



TelTx 2022.06.03.0 XMI 2023.02.14.0

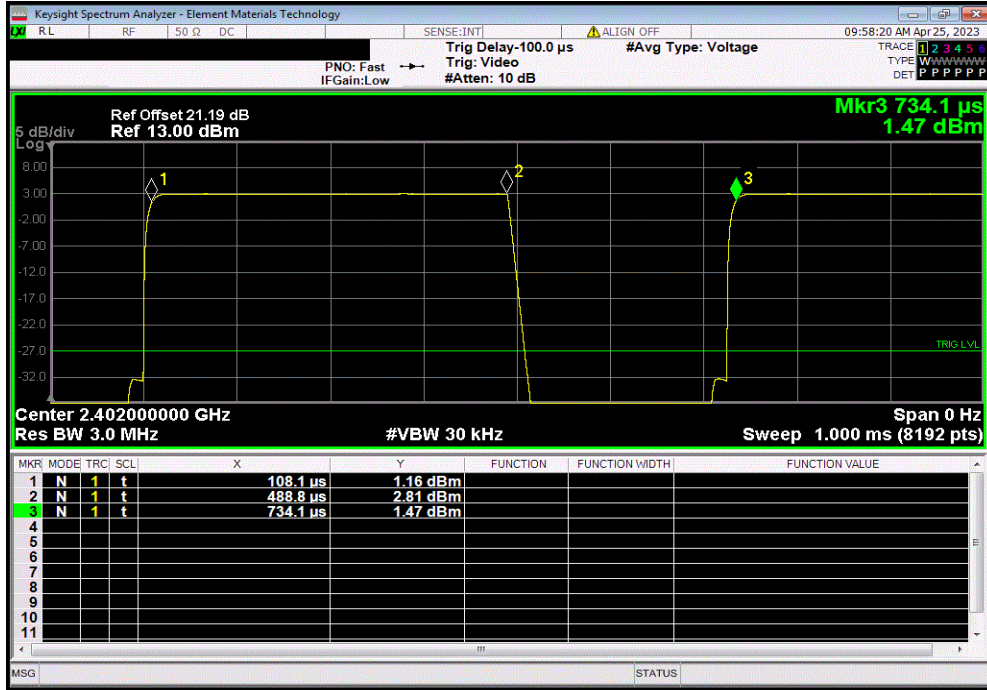
EUT: V700		Work Order: WTVD0085					
Serial Number: BWL7-000968		Date: 04/25/2023					
Customer: Motorola Solutions, Inc.		Temperature: 22.8°C					
Attendees: Navaid Karimi		Humidity: 38.3%					
Project: None		Barometric Pres.: 1016 mbar					
Tested by: Marty Martin	Power: 4.2VDC via Battery	Job Site: TX07					
TEST SPECIFICATIONS							
FCC 15.247:2023		Test Method					
RSS-Gen Issue 5:2018+A1:2019+A2:2021		ANSI C63.10:2013					
		ANSI C63.10:2013					
COMMENTS							
All measurement path losses were accounted for in the reference level offset including any attenuators, filters, and DC blocks.							
DEVIATIONS FROM TEST STANDARD							
None							
Configuration #	WTVD0085-1	Signature <i>Marty Martin</i>					
		Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
BLE/GFSK 1 Mbps Low Channel, 2402 MHz		380.662 us	625.954 us	1	60.8	N/A	N/A
BLE/GFSK 1 Mbps Low Channel, 2402 MHz		N/A	N/A	5	N/A	N/A	N/A
BLE/GFSK 1 Mbps Mid Channel, 2442 MHz		380.207 us	626.199 us	1	60.7	N/A	N/A
BLE/GFSK 1 Mbps Mid Channel, 2442 MHz		N/A	N/A	5	N/A	N/A	N/A
BLE/GFSK 1 Mbps High Channel, 2480 MHz		381.584 us	627.542 us	1	60.8	N/A	N/A
BLE/GFSK 1 Mbps High Channel, 2480 MHz		N/A	N/A	5	N/A	N/A	N/A

DUTY CYCLE

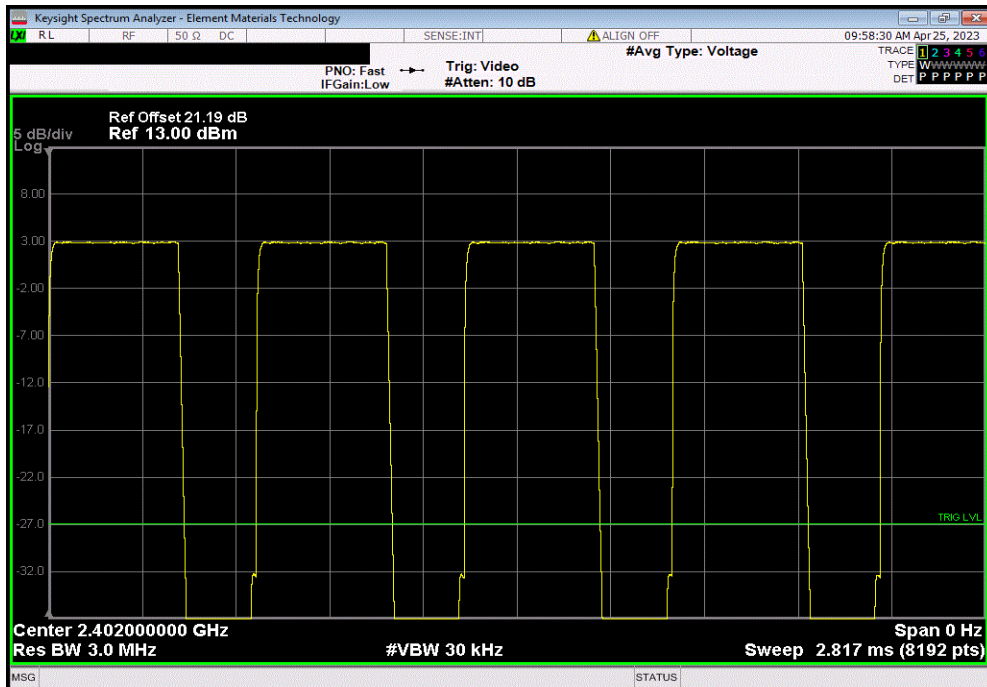


TbTx 2022.06.03.0 XMI 2023.02.14.0

BLE/GFSK 1 Mbps Low Channel, 2402 MHz						
Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results	
380.662 us	625.954 us	1	60.8	N/A	N/A	



BLE/GFSK 1 Mbps Low Channel, 2402 MHz						
Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results	
N/A	N/A	5	N/A	N/A	N/A	

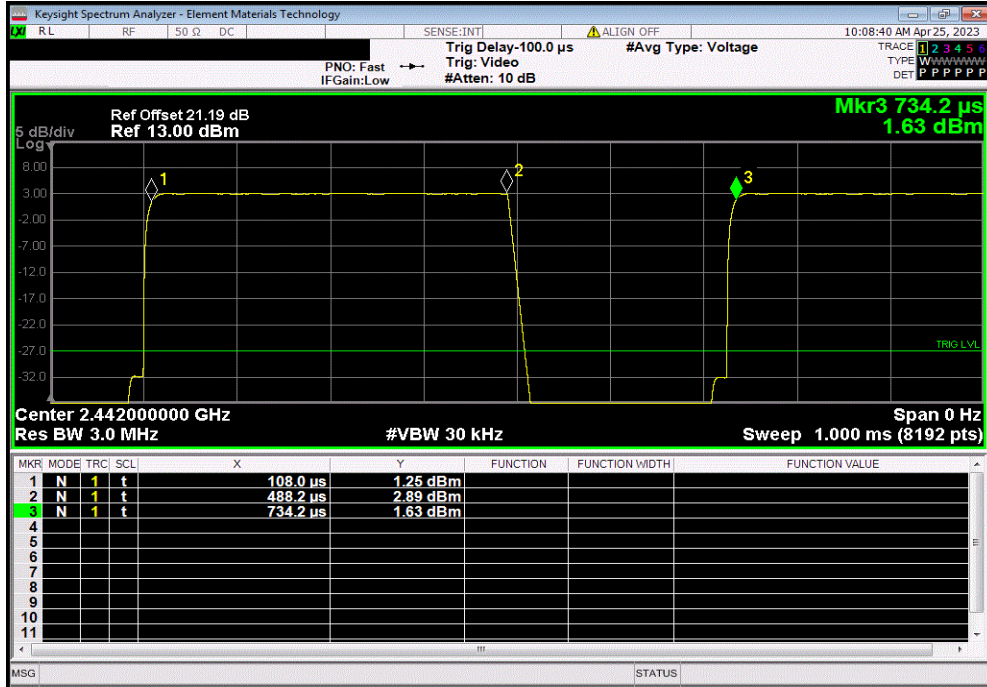


DUTY CYCLE

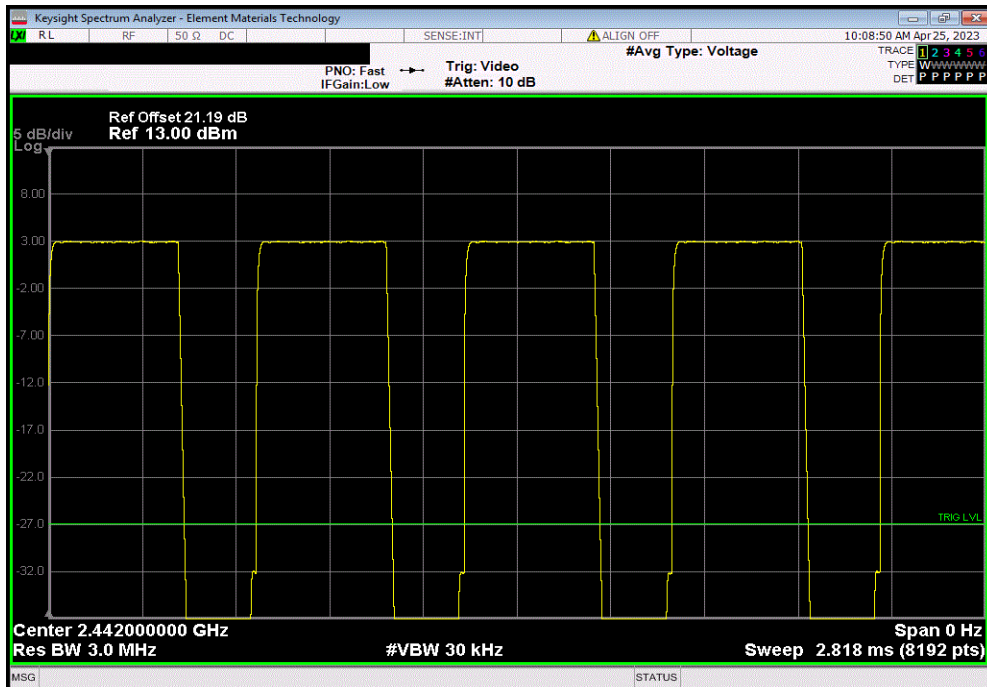


TbTx 2022.06.03.0 XMI 2023.02.14.0

BLE/GFSK 1 Mbps Mid Channel, 2442 MHz						
Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results	
380.207 us	626.199 us	1	60.7	N/A	N/A	



BLE/GFSK 1 Mbps Mid Channel, 2442 MHz						
Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results	
N/A	N/A	5	N/A	N/A	N/A	

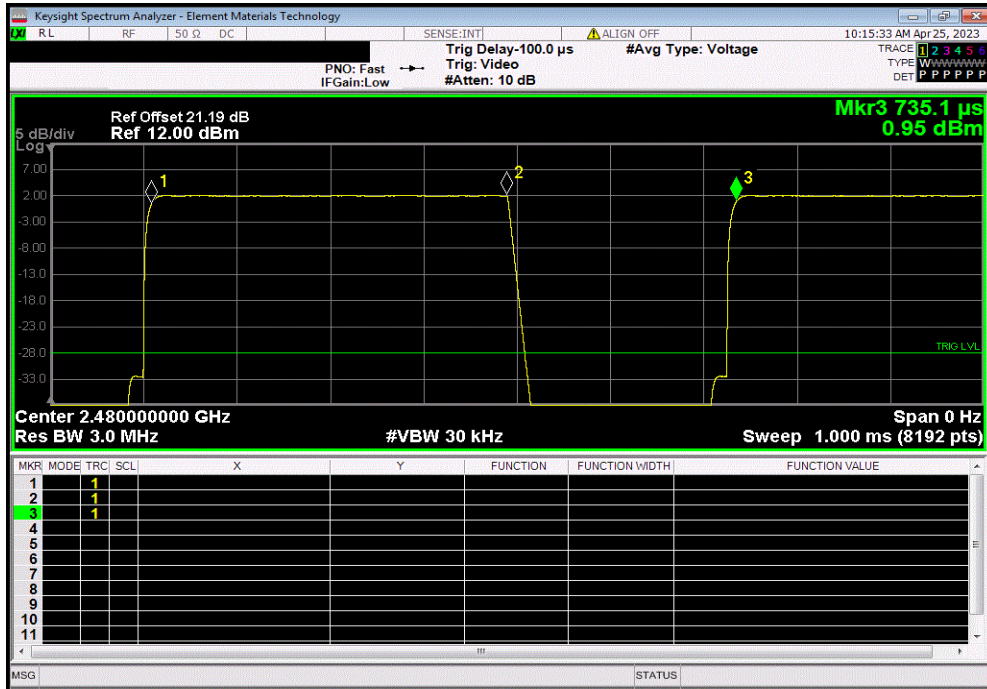


DUTY CYCLE

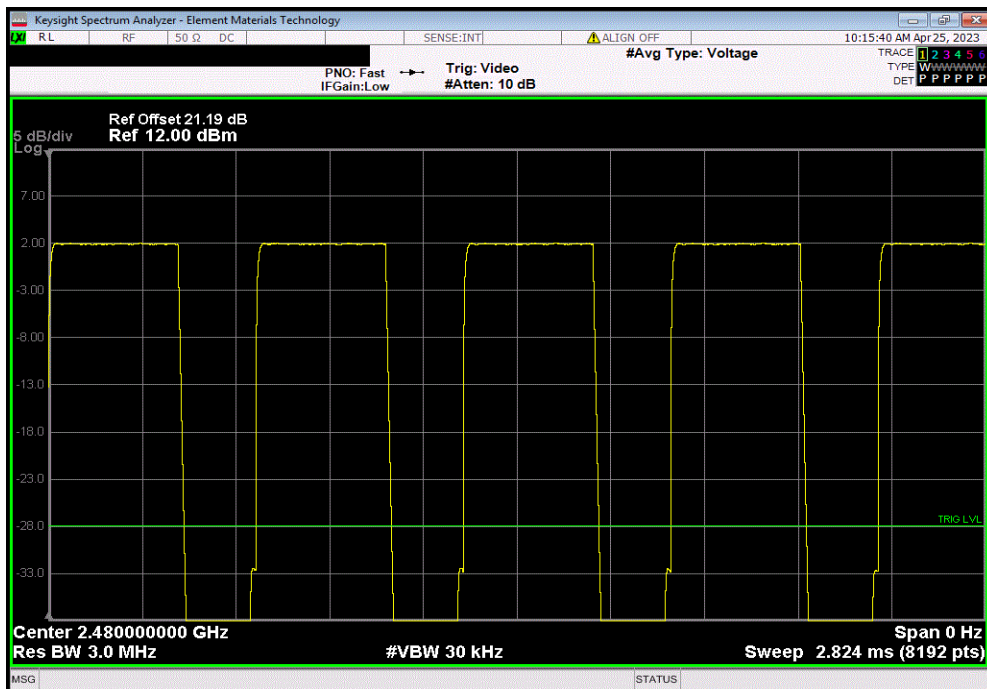


TbTx 2022.06.03.0 XMI 2023.02.14.0

BLE/GFSK 1 Mbps High Channel, 2480 MHz						
Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results	
381.584 us	627.542 us	1	60.8	N/A	N/A	



BLE/GFSK 1 Mbps High Channel, 2480 MHz						
Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results	
N/A	N/A	5	N/A	N/A	N/A	



DTS BANDWIDTH (6 dB)



XMH 2023.02.14.0

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Attenuator	Fairview Microwave	SA4018-20	TYE	2022-09-13	2023-09-13
Block - DC	Fairview Microwave	SD3239	ANE	2023-02-16	2024-02-16
Generator - Signal	Agilent	N5173B	TIW	2020-07-17	2023-07-17
Analyzer - Spectrum Analyzer	Agilent	N9010A	AFL	2023-03-17	2024-03-17
Cable	Micro-Coax	UFD150A-1-0720-200200	TXG	2022-12-08	2023-12-08

TEST DESCRIPTION

The measurement was made using a direct connection between the RF output of the EUT and a spectrum analyzer.

The EUT was set to the channels and modes listed in the datasheet.

The 6dB DTS bandwidth was measured using 100 kHz resolution bandwidth and 300 kHz video bandwidth. The span of the analyzer shall be set to capture all products of the modulation process, including the emission skirts.

DTS BANDWIDTH (6 dB)



TelTx 2022.06.03.0 XMI 2023.02.14.0

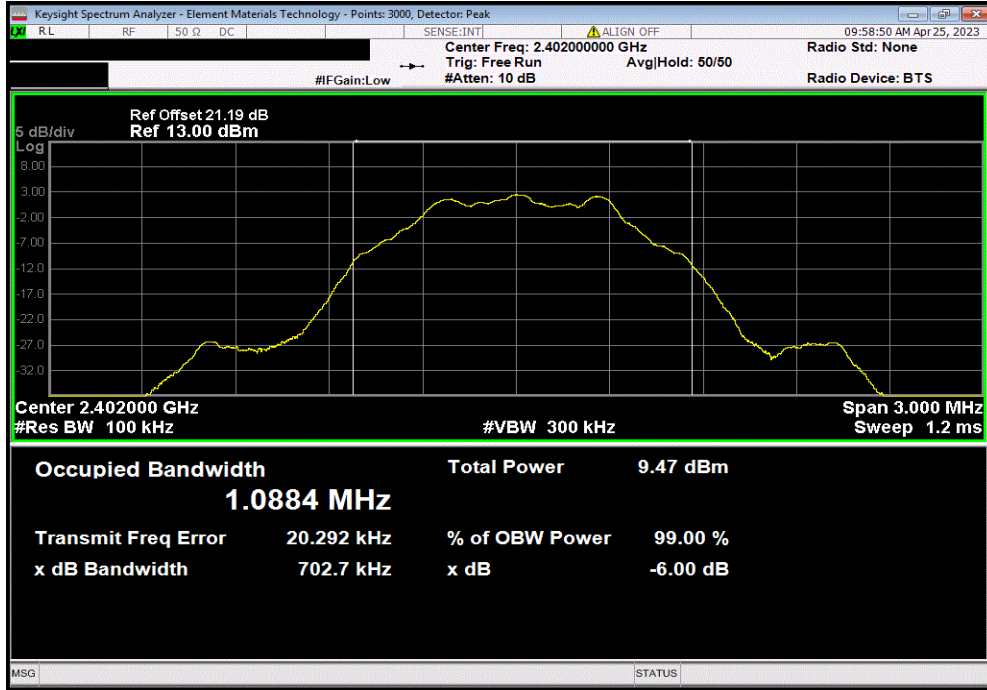
EUT: V700		Work Order: WTVD0085	
Serial Number: BWL7-000968		Date: 04/25/2023	
Customer: Motorola Solutions, Inc.		Temperature: 21.9°C	
Attendees: Navaid Karimi		Humidity: 40%	
Project: None		Barometric Pres.: 1016 mbar	
Tested by: Marty Martin	Power: 4.2VDC via Battery	Job Site: TX07	
TEST SPECIFICATIONS			
FCC 15.247:2023		Test Method	
RSS-247 Issue 2:2017		ANSI C63.10:2013	
		ANSI C63.10:2013	
COMMENTS			
All measurement path losses were accounted for in the reference level offset including any attenuators, filters, and DC blocks.			
DEVIATIONS FROM TEST STANDARD			
None			
Configuration #	WTVD0085-1	Signature <i>Marty Martin</i>	
		Value	Limit (±) Result
BLE/GFSK 1 Mbps Low Channel, 2402 MHz		702.669 kHz	500 kHz Pass
BLE/GFSK 1 Mbps Mid Channel, 2442 MHz		710.682 kHz	500 kHz Pass
BLE/GFSK 1 Mbps High Channel, 2480 MHz		707.338 kHz	500 kHz Pass

DTS BANDWIDTH (6 dB)

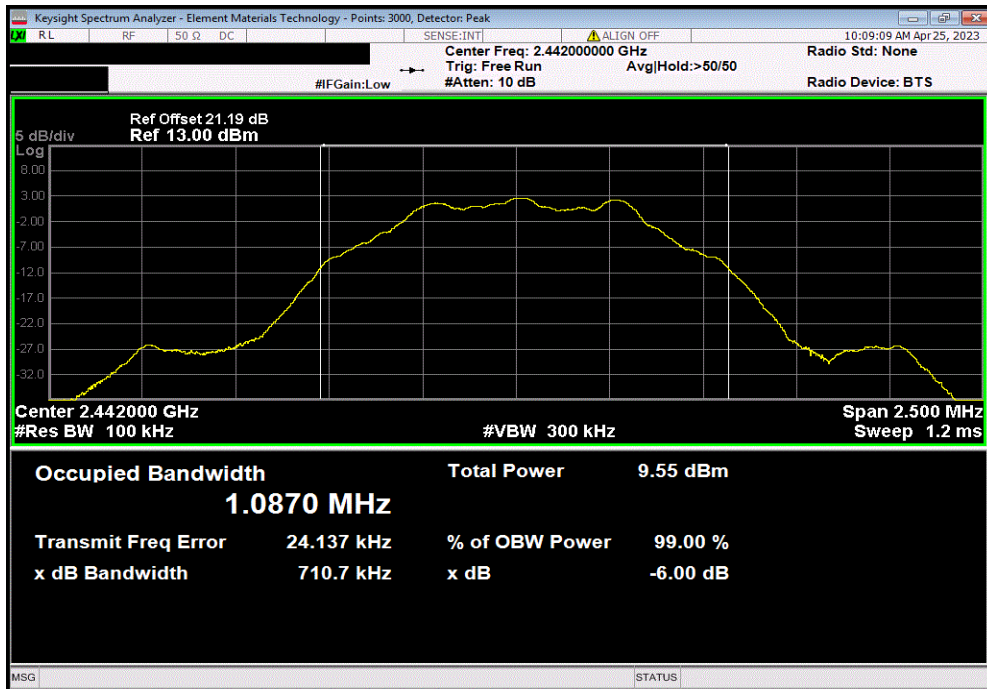


TbTx 2022.06.03.0 XMI 2023.02.14.0

BLE/GFSK 1 Mbps Low Channel, 2402 MHz				Value	Limit	Result
					(≥)	
				702.669 kHz	500 kHz	Pass



BLE/GFSK 1 Mbps Mid Channel, 2442 MHz				Value	Limit	Result
					(≥)	
				710.682 kHz	500 kHz	Pass

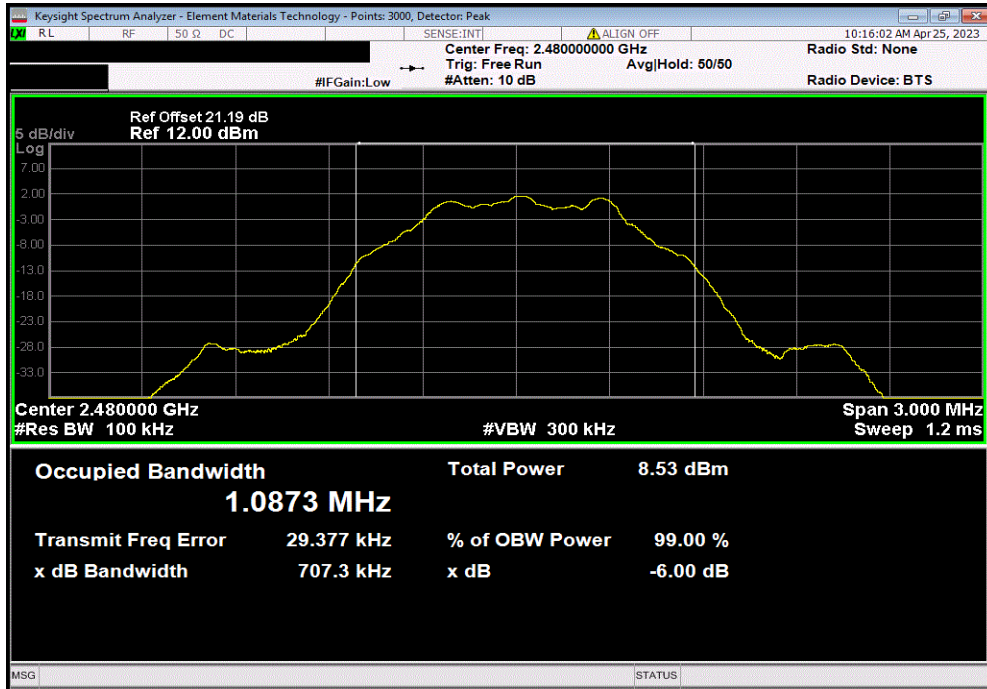


DTS BANDWIDTH (6 dB)



TbTx 2022.06.03.0 XMI 2023.02.14.0

BLE/GFSK 1 Mbps High Channel, 2480 MHz				Value	Limit	Result
				(≥)		
				707.338 kHz	500 kHz	Pass



EQUIVALENT ISOTROPIC RADIATED POWER (EIRP)



XMit 2023.02.14.0

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Attenuator	Fairview Microwave	SA4018-20	TYE	2022-09-13	2023-09-13
Block - DC	Fairview Microwave	SD3239	ANE	2023-02-16	2024-02-16
Cable	Micro-Coax	UFD150A-1-0720-200200	TXG	2022-12-08	2023-12-08
Generator - Signal	Agilent	N5173B	TIW	2020-07-17	2023-07-17
Analyzer - Spectrum Analyzer	Agilent	N9010A	AFL	2023-03-17	2024-03-17

TEST DESCRIPTION

The measurement was made using a direct connection between the RF output of the EUT and a spectrum analyzer.

The fundamental emission output power (maximum average conducted output power) was measured using the channels and modes as called out on the following data sheets. The transmit power was set to its default maximum.

Prior to measuring output power; the emission bandwidth (B) and the transmission pulse duration (T) were measured. Both are required to determine the method of measuring Maximum Conducted Output Power. The transmission pulse duration (T) was measured using a zero span on the spectrum analyzer to see the pulses in the time domain.

The method AVGSA-2 in section 11.9.2.2.4 of ANSI C63.10:2013 was used to make the measurement. This method uses trace averaging across ON and OFF times of the EUT transmissions in the spectrum analyzer channel power function using an RMS detector. Following the measurement a duty cycle correction was applied by adding $[10 \log (1 / D)]$, where D is the duty cycle, to the measured power to compute the average power during the actual transmission times.

Equivalent Isotropic Radiated Power (EIRP) = Max Measured Power + Antenna gain (dBi)

EQUIVALENT ISOTROPIC RADIATED POWER (EIRP)



TelTx 2022.06.03.0 XMit 2023.02.14.0

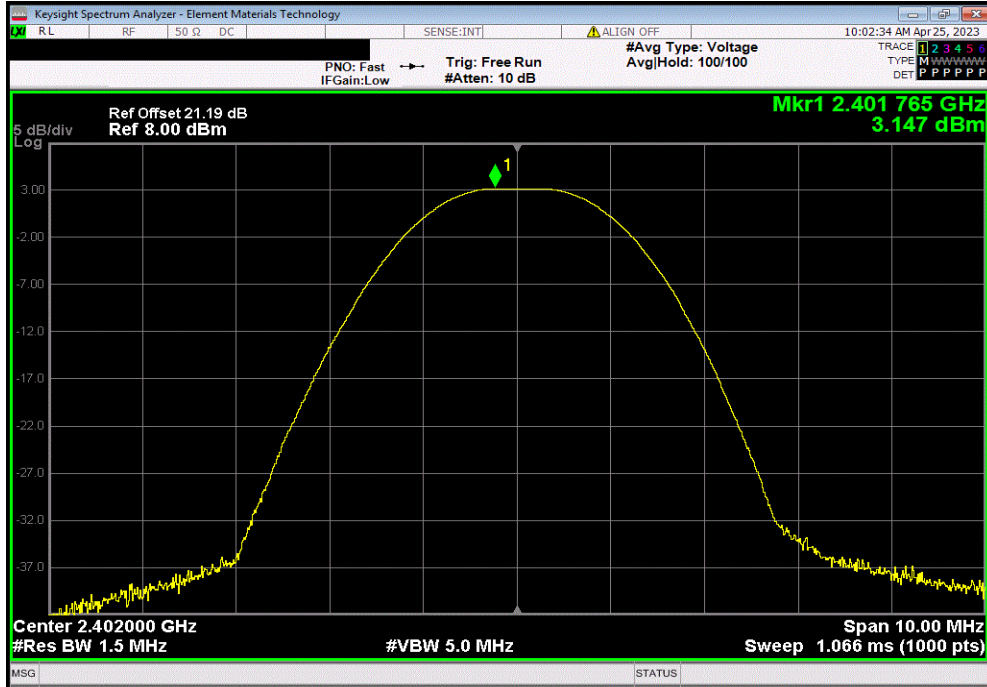
EUT: V700		Work Order: WTVD0085				
Serial Number: BWL7-000968		Date: 04/25/2023				
Customer: Motorola Solutions, Inc.		Temperature: 22.2°C				
Attendees: Navaid Karimi		Humidity: 39.4%				
Project: None		Barometric Pres.: 1016 mbar				
Tested by: Marty Martin	Power: 4.2VDC via Battery	Job Site: TX07				
TEST SPECIFICATIONS						
FCC 15.247:2023		Test Method				
RSS-247 Issue 2:2017		ANSI C63.10:2013				
RSS-Gen Issue 5:2018+A1:2019+A2:2021		ANSI C63.10:2013				
COMMENTS						
All measurement path losses were accounted for in the reference level offset including any attenuators, filters, and DC blocks.						
DEVIATIONS FROM TEST STANDARD						
None						
Configuration #	WTVD0085-1	Signature <i>Marty Martin</i>				
		Out Pwr (dBm)	Antenna Gain (dBi)	EIRP (dBm)	EIRP Limit (dBm)	Result
BLE/GFSK 1 Mbps Low Channel, 2402 MHz		3.147	2.7	5.847	36	Pass
BLE/GFSK 1 Mbps Mid Channel, 2442 MHz		3.256	2.7	5.956	36	Pass
BLE/GFSK 1 Mbps High Channel, 2480 MHz		2.522	2.7	5.222	36	Pass

EQUIVALENT ISOTROPIC RADIATED POWER (EIRP)

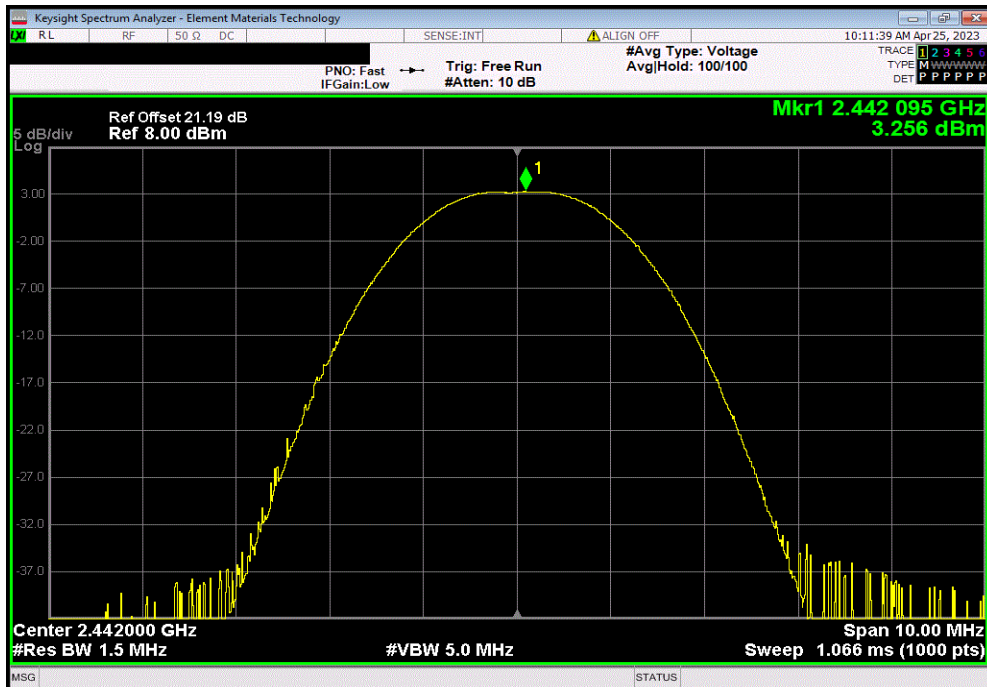


TbTx 2022.06.03.0 XMi 2023.02.14.0

BLE/GFSK 1 Mbps Low Channel, 2402 MHz						
Out Pwr (dBm)	Antenna Gain (dBi)	EIRP (dBm)	EIRP Limit (dBm)	Result		
3.147	2.7	5.847	36	Pass		



BLE/GFSK 1 Mbps Mid Channel, 2442 MHz						
Out Pwr (dBm)	Antenna Gain (dBi)	EIRP (dBm)	EIRP Limit (dBm)	Result		
3.256	2.7	5.956	36	Pass		

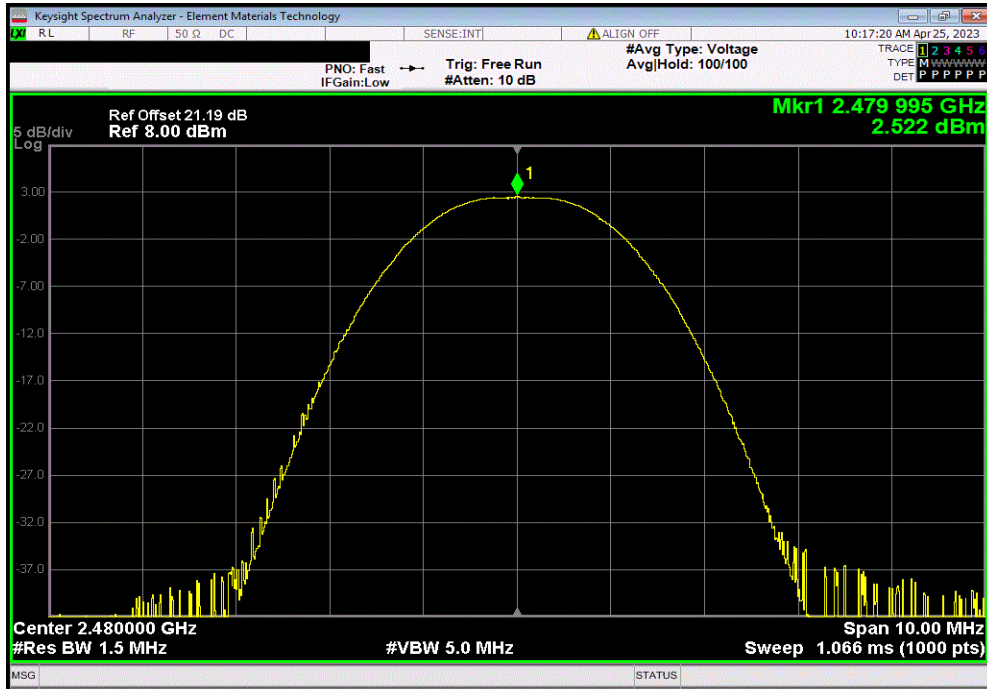


EQUIVALENT ISOTROPIC RADIATED POWER (EIRP)



TbTx 2022.06.03.0 XMI 2023.02.14.0

BLE/GFSK 1 Mbps High Channel, 2480 MHz					
Out Pwr (dBm)	Antenna Gain (dBi)	EIRP (dBm)	EIRP Limit (dBm)	Result	
2.522	2.7	5.222	36	Pass	





OCCUPIED BANDWIDTH (99%)

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Attenuator	Fairview Microwave	SA4018-20	TYE	2022-09-13	2023-09-13
Block - DC	Fairview Microwave	SD3239	ANE	2023-02-16	2024-02-16
Cable	Micro-Coax	UFD150A-1-0720-200200	TXG	2022-12-08	2023-12-08
Generator - Signal	Agilent	N5173B	TIW	2020-07-17	2023-07-17
Analyzer - Spectrum Analyzer	Agilent	N9010A	AFL	2023-03-17	2024-03-17

TEST DESCRIPTION

The measurement was made using a direct connection between the RF output of the EUT and a spectrum analyzer.

The 99% occupied bandwidth was measured with the EUT configured for continuous modulated operation.

Per ANSI C63.10:2013, 6.9.3, the spectrum analyzer was configured as follows:

The span of the analyzer shall be set to capture all products of the modulation process, including the emission skirts.

The resolution bandwidth (RBW) of the spectrum analyzer was set to the range of 1% to 5% of the occupied bandwidth (OBW) and video bandwidth (VBW) bandwidth was set to at least 3 times the resolution bandwidth. The analyzer sweep time was set to auto to prevent video filtering or averaging. A sample detector was used unless the device was not able to be operated in a continuous transmit mode, in which case a peak detector was used.

The spectrum analyzer occupied bandwidth measurement function was used to sum the power of the transmission in linear terms to obtain the 99% bandwidth.

OCCUPIED BANDWIDTH (99%)



TelTx 2022.06.03.0 XMI 2023.02.14.0

EUT: V700		Work Order: WTVD0085
Serial Number: BWL7-000968		Date: 04/25/2023
Customer: Motorola Solutions, Inc.		Temperature: 22.3°C
Attendees: Navaid Karimi		Humidity: 39.5%
Project: None		Barometric Pres.: 1016 mbar
Tested by: Marty Martin	Power: 4.2VDC via Battery	Job Site: TX07
TEST SPECIFICATIONS		
FCC 15.247:2023		Test Method
RSS-Gen Issue 5:2018+A1:2019+A2:2021		ANSI C63.10:2013
		ANSI C63.10:2013
COMMENTS		
All measurement path losses were accounted for in the reference level offset including any attenuators, filters, and DC blocks.		
DEVIATIONS FROM TEST STANDARD		
None		
Configuration #	WTVD0085-1	Signature <i>Marty Martin</i>

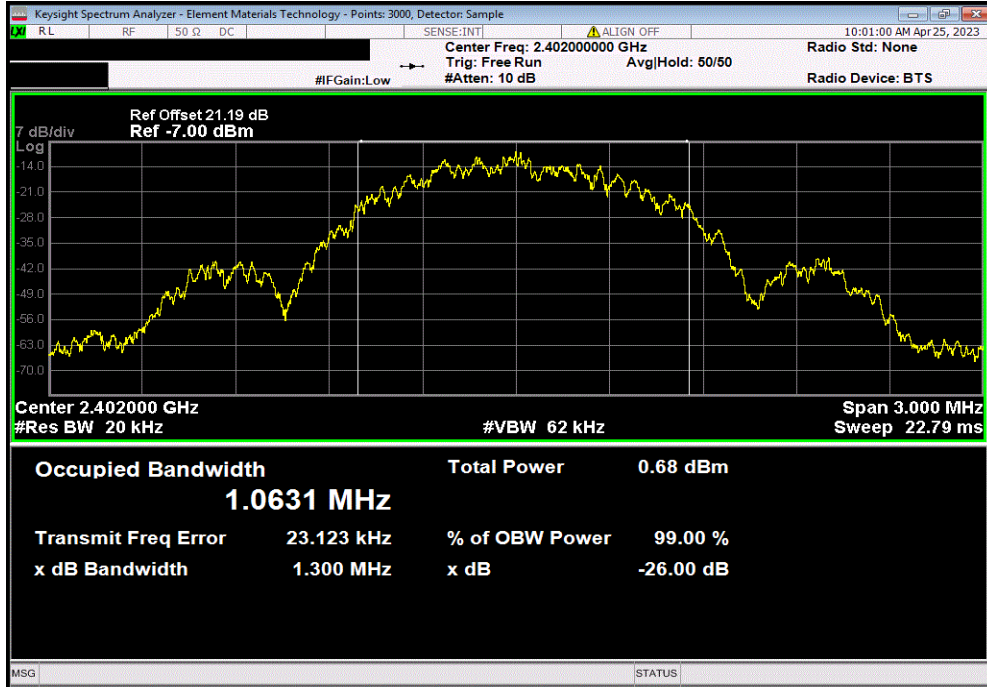
	Value	Limit	Result
BLE/GFSK 1 Mbps Low Channel, 2402 MHz	1.063 MHz	N/A	N/A
BLE/GFSK 1 Mbps Mid Channel, 2442 MHz	1.057 MHz	N/A	N/A
BLE/GFSK 1 Mbps High Channel, 2480 MHz	1.059 MHz	N/A	N/A

OCCUPIED BANDWIDTH (99%)

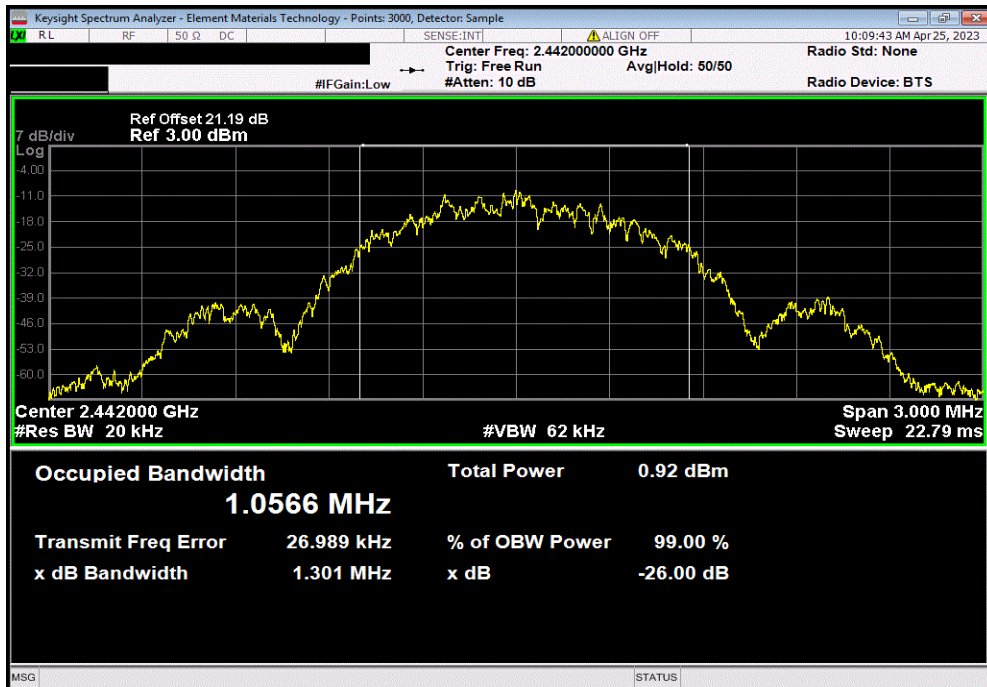


TbTx 2022.06.03.0 XbM 2023.02.14.0

BLE/GFSK 1 Mbps Low Channel, 2402 MHz						
				Value	Limit	Result
				1.063 MHz	N/A	N/A



BLE/GFSK 1 Mbps Mid Channel, 2442 MHz						
				Value	Limit	Result
				1.057 MHz	N/A	N/A

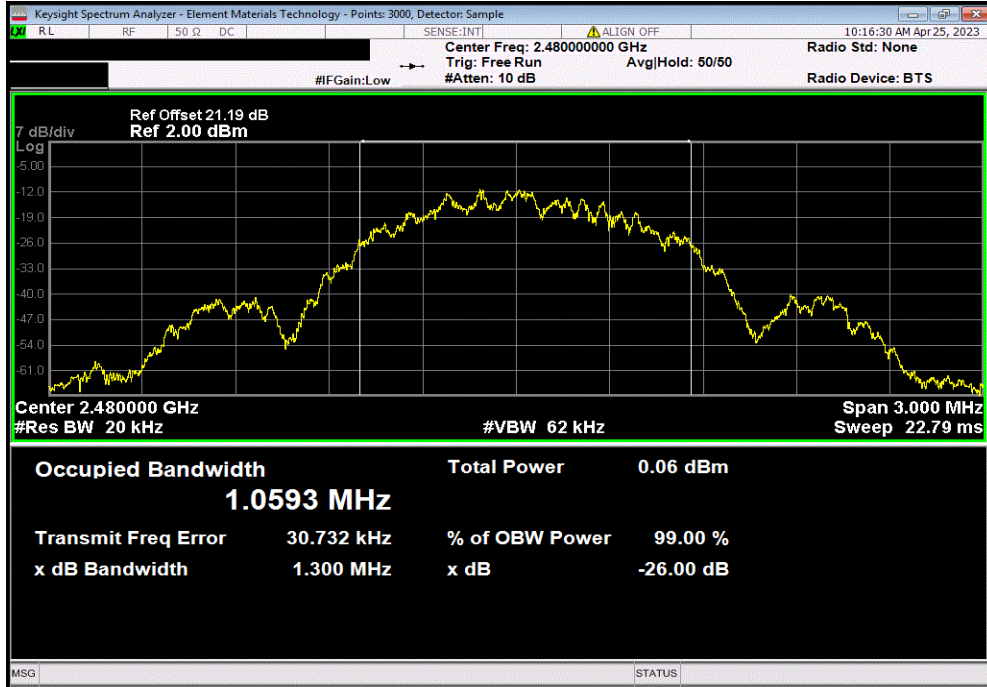


OCCUPIED BANDWIDTH (99%)



TbTx 2022.06.03.0 XMI 2023.02.14.0

BLE/GFSK 1 Mbps High Channel, 2480 MHz			
	Value	Limit	Result
	1.059 MHz	N/A	N/A



OUTPUT POWER



XMIT 2023.02.14.0

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Attenuator	Fairview Microwave	SA4018-20	TYE	2022-09-13	2023-09-13
Block - DC	Fairview Microwave	SD3239	ANE	2023-02-16	2024-02-16
Cable	Micro-Coax	UFD150A-1-0720-200200	TXG	2022-12-08	2023-12-08
Generator - Signal	Agilent	N5173B	TIW	2020-07-17	2023-07-17
Analyzer - Spectrum Analyzer	Agilent	N9010A	AFL	2023-03-17	2024-03-17

TEST DESCRIPTION

The measurement was made using a direct connection between the RF output of the EUT and a spectrum analyzer.

The transmit frequency was set to the required channels in each band. The transmit power was set to its default maximum.

Prior to measuring peak transmit power the DTS bandwidth (B) was measured.

The method found in ANSI C63.10:2013 Section 11.9.1.1 was used because the RBW on the analyzer was greater than the DTS Bandwidth of the radio.

OUTPUT POWER



TelTx 2022.06.03.0 XMI 2023.02.14.0

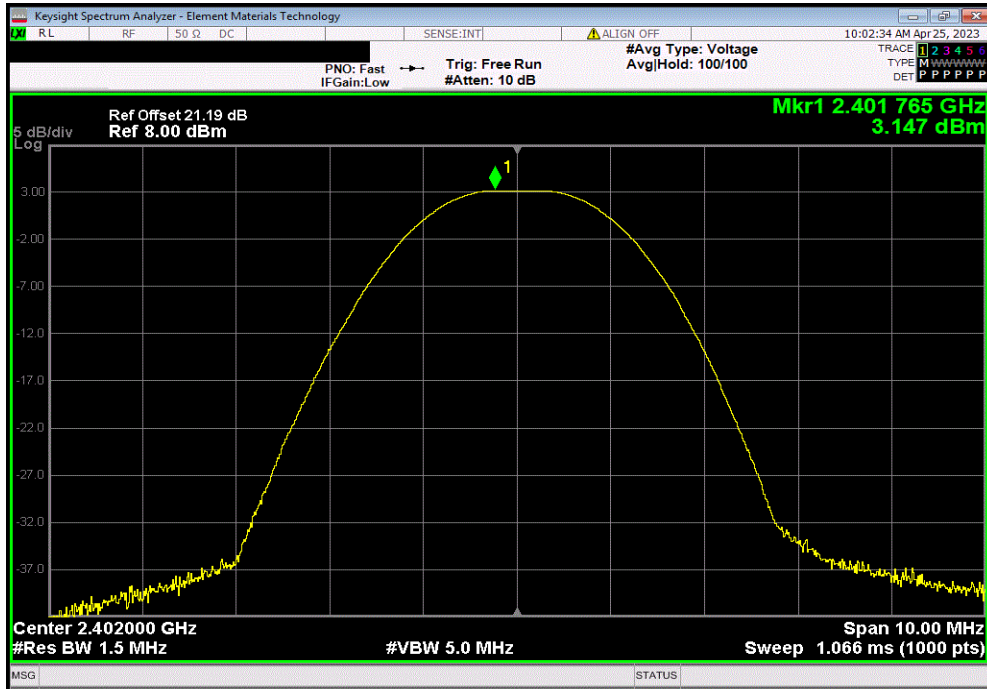
EUT: V700		Work Order: WTVD0085	
Serial Number: BWL7-000968		Date: 04/25/2023	
Customer: Motorola Solutions, Inc.		Temperature: 22.4°C	
Attendees: Navaid Karimi		Humidity: 39.4%	
Project: None		Barometric Pres.: 1016 mbar	
Tested by: Marty Martin	Power: 4.2VDC via Battery	Job Site: TX07	
TEST SPECIFICATIONS			
FCC 15.247:2023		Test Method	
RSS-247 Issue 2:2017		ANSI C63.10:2013	
RSS-Gen Issue 5:2018+A1:2019+A2:2021		ANSI C63.10:2013	
COMMENTS			
All measurement path losses were accounted for in the reference level offset including any attenuators, filters, and DC blocks.			
DEVIATIONS FROM TEST STANDARD			
None			
Configuration #	WTVD0085-1	Signature	<i>Marty Martin</i>
		Out Pwr (dBm)	Limit (dBm) Result
		3.147	30 Pass
		3.256	30 Pass
		2.522	30 Pass

OUTPUT POWER

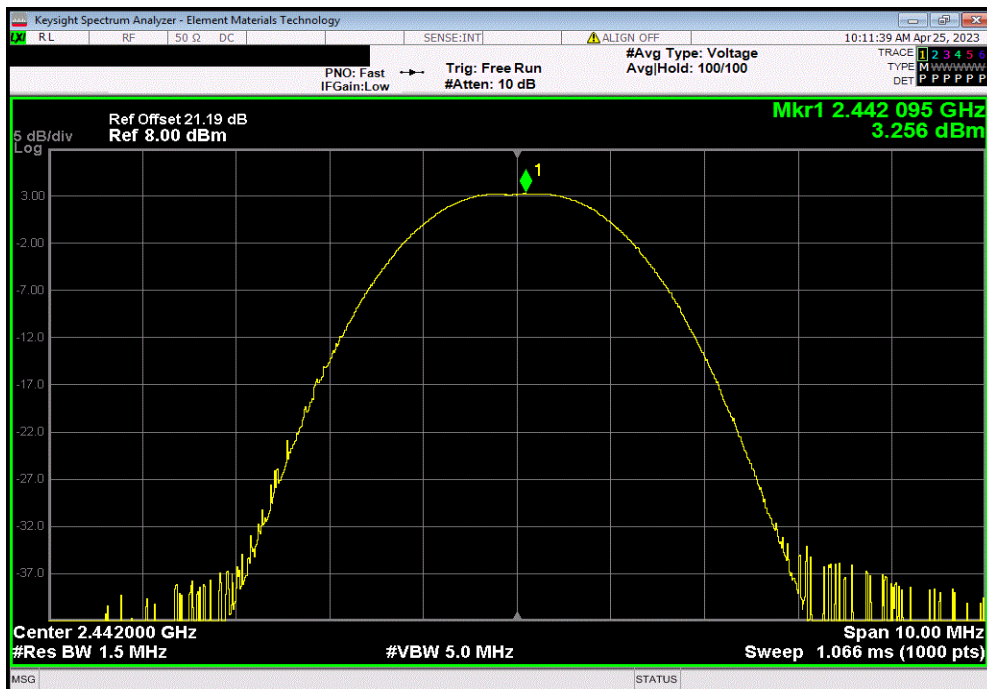


TbTx 2022.06.03.0 XMI 2023.02.14.0

BLE/GFSK 1 Mbps Low Channel, 2402 MHz						
	Out Pwr (dBm)	Limit (dBm)	Result			
	3.147	30	Pass			



BLE/GFSK 1 Mbps Mid Channel, 2442 MHz						
	Out Pwr (dBm)	Limit (dBm)	Result			
	3.256	30	Pass			

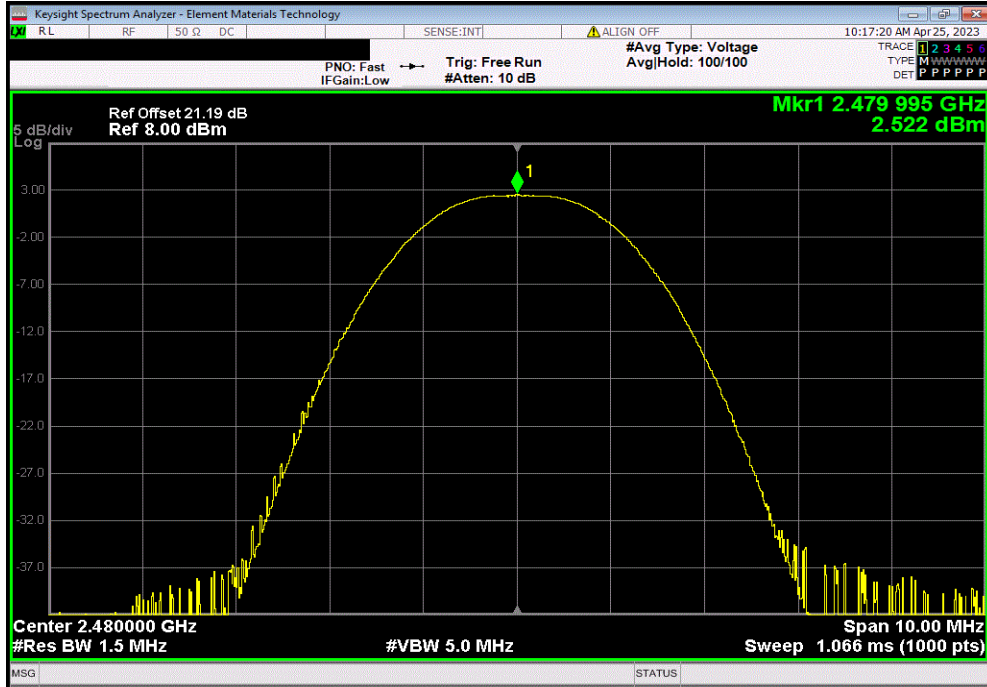


OUTPUT POWER



TbTx 2022.06.03.0 XMI 2023.02.14.0

BLE/GFSK 1 Mbps High Channel, 2480 MHz						
	Out Pwr (dBm)	Limit (dBm)	Result			
	2.522	30	Pass			



BAND EDGE COMPLIANCE



element

XMIT 2023.02.14.0

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Analyzer - Spectrum Analyzer	Agilent	N9010A	AFL	2023-03-17	2024-03-17
Generator - Signal	Agilent	N5173B	TIW	2020-07-17	2023-07-17
Block - DC	Fairview Microwave	SD3239	ANE	2023-02-16	2024-02-16
Attenuator	Fairview Microwave	SA4018-20	TYE	2022-09-13	2023-09-13
Cable	Micro-Coax	UFD150A-1-0720-200200	TXG	2022-12-08	2023-12-08

TEST DESCRIPTION

The measurement was made using a direct connection between the RF output of the EUT and a spectrum analyzer.

The spurious RF conducted emissions at the edges of the authorized bands were measured with the EUT set to low and high transmit frequencies in each available band. The channels closest to the band edges were selected. The EUT was transmitting at the data rate(s) listed in the datasheet.

The spectrum was scanned below the lower band edge and above the higher band edge.

BAND EDGE COMPLIANCE



TelTx 2022.06.03.0 XMI 2023.02.14.0

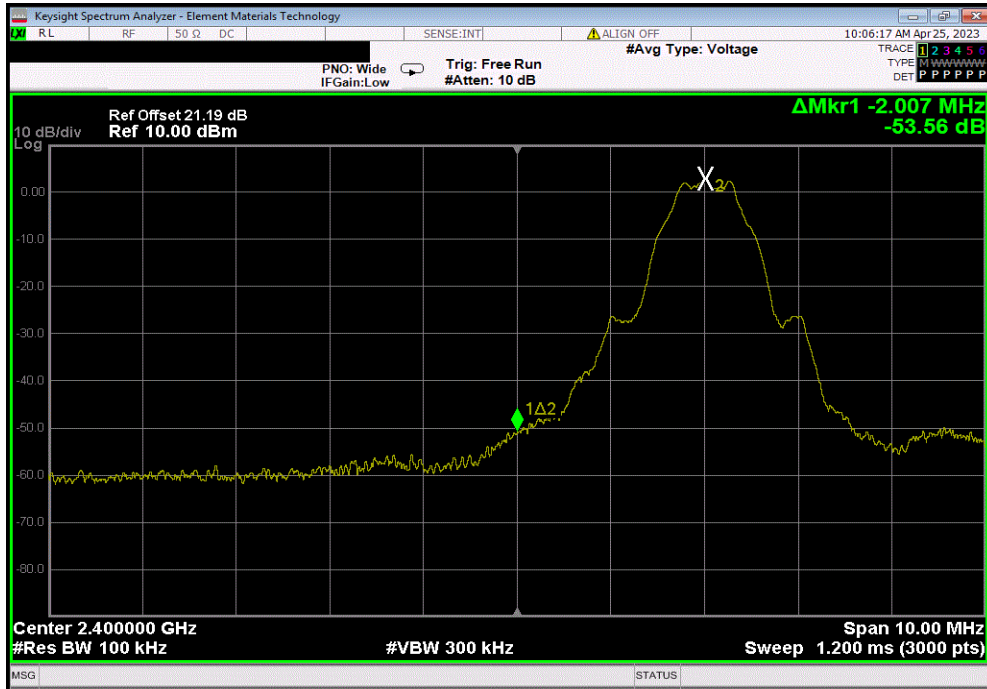
EUT: V700		Work Order: WTVD0085	
Serial Number: BWL7-000968		Date: 04/25/2023	
Customer: Motorola Solutions, Inc.		Temperature: 21.3°C	
Attendees: Navaid Karimi		Humidity: 41.1%	
Project: None		Barometric Pres.: 1016 mbar	
Tested by: Marty Martin	Power: 4.2VDC via Battery	Job Site: TX07	
TEST SPECIFICATIONS			
FCC 15.247:2023		ANSI C63.10:2013	
RSS-247 Issue 2:2017		ANSI C63.10:2013	
COMMENTS			
All measurement path losses were accounted for in the reference level offset including any attenuators, filters, and DC blocks.			
DEVIATIONS FROM TEST STANDARD			
None			
Configuration #	WTVD0085-1	Signature <i>Marty Martin</i>	
		Value (dBc)	Limit ≤ (dBc) Result
BLE/GFSK 1 Mbps Low Channel, 2402 MHz		-53.56	-20 Pass
BLE/GFSK 1 Mbps High Channel, 2480 MHz		-58.6	-20 Pass

BAND EDGE COMPLIANCE

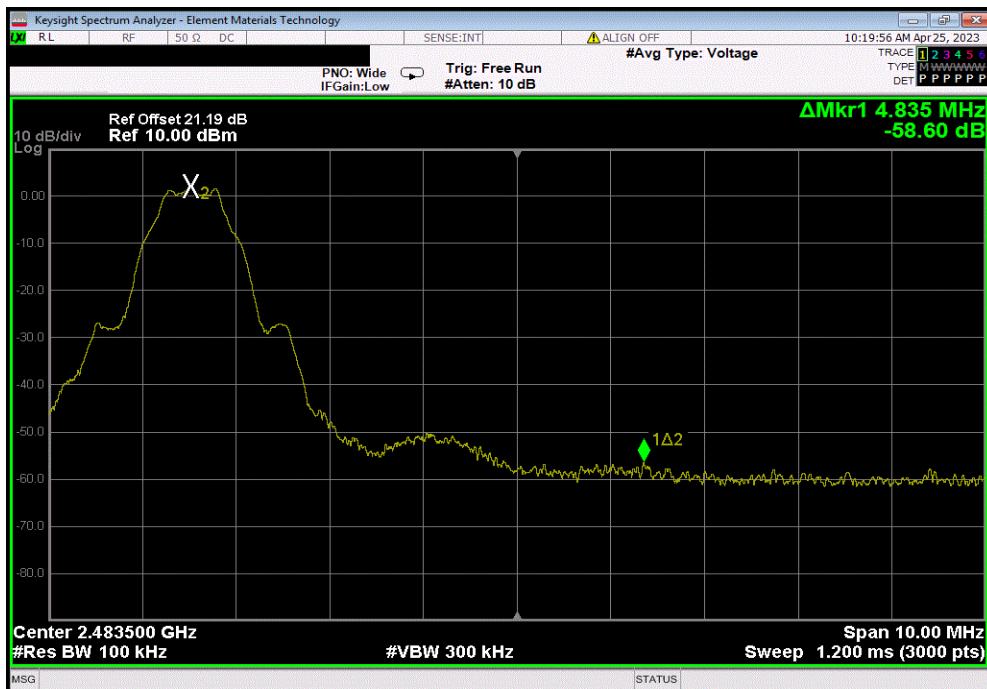


TbTx 2022.06.03.0 XMi 2023.02.14.0

BLE/GFSK 1 Mbps Low Channel, 2402 MHz						
				Value (dBc)	Limit ≤ (dBc)	Result
				-53.56	-20	Pass



BLE/GFSK 1 Mbps High Channel, 2480 MHz						
				Value (dBc)	Limit ≤ (dBc)	Result
				-58.6	-20	Pass



POWER SPECTRAL DENSITY



element

XMIT 2023.02.14.0

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Attenuator	Fairview Microwave	SA4018-20	TYE	2022-09-13	2023-09-13
Block - DC	Fairview Microwave	SD3239	ANE	2023-02-16	2024-02-16
Cable	Micro-Coax	UFD150A-1-0720-200200	TXG	2022-12-08	2023-12-08
Generator - Signal	Agilent	N5173B	TIW	2020-07-17	2023-07-17
Analyzer - Spectrum Analyzer	Agilent	N9010A	AFL	2023-03-17	2024-03-17

TEST DESCRIPTION

The measurement was made using a direct connection between the RF output of the EUT and a spectrum analyzer.

The maximum power spectral density measurements was measured using the channels and modes as called out on the following data sheets.

Per the procedure outlined in ANSI C63.10 the peak power spectral density was measured in a 3 kHz RBW.

POWER SPECTRAL DENSITY



TelTx 2022.06.03.0 XMI 2023.02.14.0

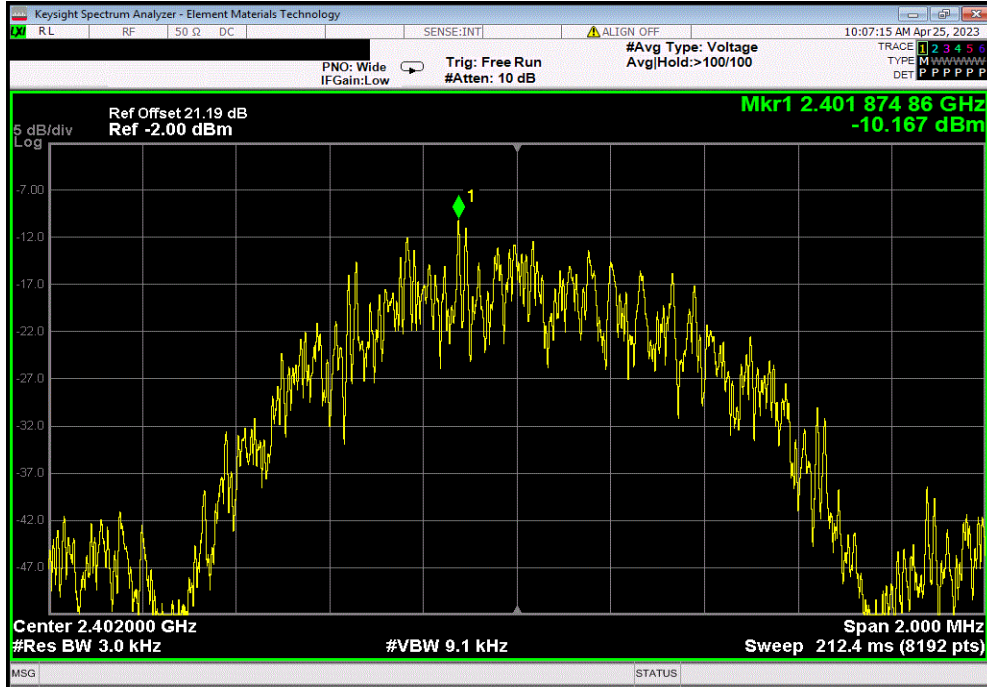
EUT: V700		Work Order: WTVD0085	
Serial Number: BWL7-000968		Date: 04/25/2023	
Customer: Motorola Solutions, Inc.		Temperature: 22.5°C	
Attendees: Navaid Karimi		Humidity: 38.9%	
Project: None		Barometric Pres.: 1016 mbar	
Tested by: Marty Martin	Power: 4.2VDC via Battery	Job Site: TX07	
TEST SPECIFICATIONS			
FCC 15.247:2023		ANSI C63.10:2013	
RSS-247 Issue 2:2017		ANSI C63.10:2013	
COMMENTS			
All measurement path losses were accounted for in the reference level offset including any attenuators, filters, and DC blocks.			
DEVIATIONS FROM TEST STANDARD			
None			
Configuration #	WTVD0085-1	Signature <i>Marty Martin</i>	
		Value dBm/3kHz	Limit < dBm/3kHz
BLE/GFSK 1 Mbps Low Channel, 2402 MHz		-10.167	8
BLE/GFSK 1 Mbps Mid Channel, 2442 MHz		-10.16	8
BLE/GFSK 1 Mbps High Channel, 2480 MHz		-10.846	8
			Results
			Pass
			Pass
			Pass

POWER SPECTRAL DENSITY

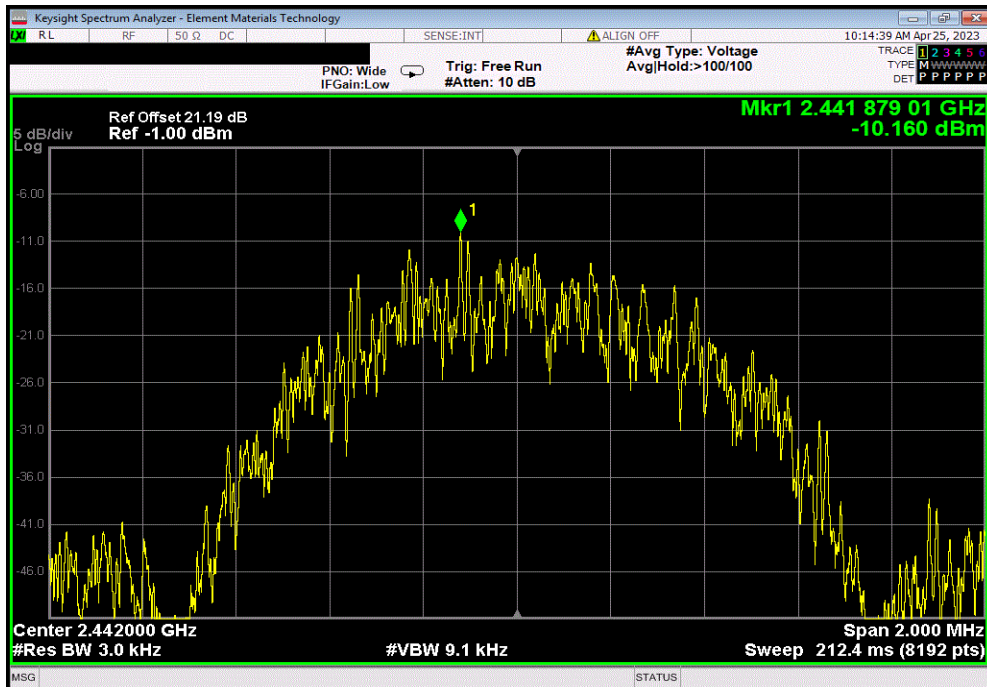


TbTx 2022.06.03.0 XMI 2023.02.14.0

BLE/GFSK 1 Mbps Low Channel, 2402 MHz			
Value	Limit	Results	
dBm/3kHz	< dBm/3kHz		
-10.167	8	Pass	



BLE/GFSK 1 Mbps Mid Channel, 2442 MHz			
Value	Limit	Results	
dBm/3kHz	< dBm/3kHz		
-10.16	8	Pass	

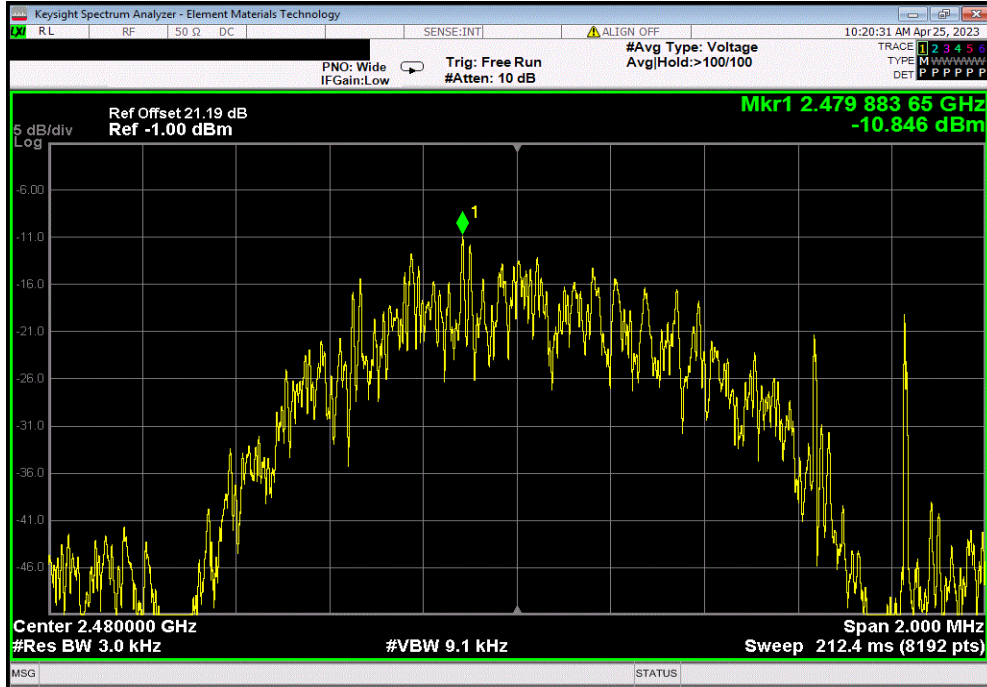


POWER SPECTRAL DENSITY



TbTx 2022.06.03.0 XMI 2023.02.14.0

BLE/GFSK 1 Mbps High Channel, 2480 MHz				Value	Limit	Results
				dBm/3kHz	< dBm/3kHz	
				-10.846	8	Pass





SPURIOUS CONDUCTED EMISSIONS

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Attenuator	Fairview Microwave	SA4018-20	TYE	2022-09-13	2023-09-13
Block - DC	Fairview Microwave	SD3239	ANE	2023-02-16	2024-02-16
Cable	Micro-Coax	UFD150A-1-0720-200200	TXG	2022-12-08	2023-12-08
Generator - Signal	Agilent	N5173B	TIW	2020-07-17	2023-07-17
Analyzer - Spectrum Analyzer	Agilent	N9010A	AFL	2023-03-17	2024-03-17

TEST DESCRIPTION

The measurement was made using a direct connection between the RF output of the EUT and a spectrum analyzer.

The spurious RF conducted emissions were measured with the EUT set to low, medium and high transmit frequencies. The EUT was transmitting at the data rate(s) listed in the datasheet. For each transmit frequency, the fundamental was measured with a 100 kHz resolution bandwidth and the highest value was recorded. The rest of the spectrum was then measured with a 100 kHz resolution bandwidth and the highest value was found. The difference between the value found on the fundamental and the rest of the spectrum was compared against the limit to determine compliance.

The reference level offset for the fundamental screen capture was based on a measured value of the loss between the spectrum analyzer and the EUT which was verified at the time of test. The remaining screen capture(s) use an internal transducer factor on the analyzer to correct the displayed trace based on the cable loss over frequency. The reference level offset for the additional screen capture(s) is then based on the expected attenuator value and any other losses.

Fundamental Offset = Ref Lvl Offset showing measured composite factor of all losses

Remaining Screen capture(s) Offset = "Internal" cable loss factor not shown on screen capture + Ref Lvl Offset showing expected attenuator value and any other losses

SPURIOUS CONDUCTED EMISSIONS



TelTx 2022.06.03.0 XMI 2023.02.14.0

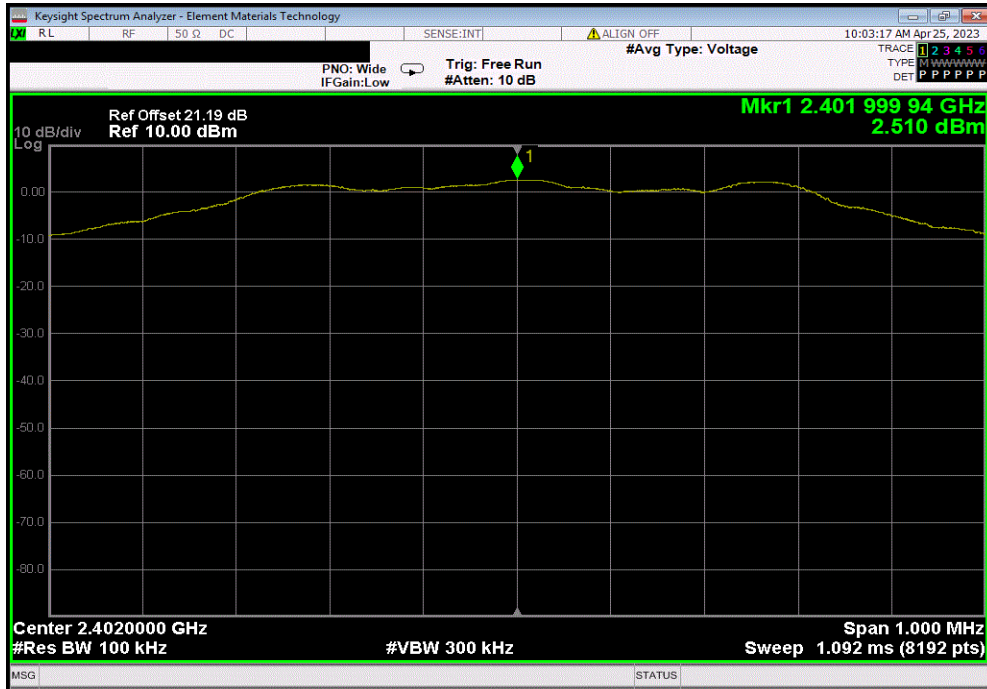
EUT: V700		Work Order: WTVD0085				
Serial Number: BWL7-000968		Date: 04/25/2023				
Customer: Motorola Solutions, Inc.		Temperature: 22.6°C				
Attendees: Navaid Karimi		Humidity: 38.7%				
Project: None		Barometric Pres.: 1016 mbar				
Tested by: Marty Martin	Power: 4.2VDC via Battery	Job Site: TX07				
TEST SPECIFICATIONS						
FCC 15.247:2023		Test Method				
RSS-247 Issue 2:2017		ANSI C63.10:2013				
		ANSI C63.10:2013				
COMMENTS						
All measurement path losses were accounted for in the reference level offset including any attenuators, filters, and DC blocks.						
DEVIATIONS FROM TEST STANDARD						
None						
Configuration #	WTVD0085-1	Signature <i>Marty Martin</i>				
		Frequency Range	Measured Freq (MHz)	Max Value (dBc)	Limit ≤ (dBc)	Result
BLE/GFSK 1 Mbps Low Channel, 2402 MHz		Fundamental	2402	N/A	N/A	N/A
BLE/GFSK 1 Mbps Low Channel, 2402 MHz		30 MHz - 12.5 GHz	3793.38	-55.46	-20	Pass
BLE/GFSK 1 Mbps Low Channel, 2402 MHz		12.5 GHz - 25 GHz	24809.24	-52.02	-20	Pass
BLE/GFSK 1 Mbps Mid Channel, 2442 MHz		Fundamental	2442	N/A	N/A	N/A
BLE/GFSK 1 Mbps Mid Channel, 2442 MHz		30 MHz - 12.5 GHz	3886.25	-55.71	-20	Pass
BLE/GFSK 1 Mbps Mid Channel, 2442 MHz		12.5 GHz - 25 GHz	24558.97	-52.66	-20	Pass
BLE/GFSK 1 Mbps High Channel, 2480 MHz		Fundamental	2480.01	N/A	N/A	N/A
BLE/GFSK 1 Mbps High Channel, 2480 MHz		30 MHz - 12.5 GHz	4731.18	-54.49	-20	Pass
BLE/GFSK 1 Mbps High Channel, 2480 MHz		12.5 GHz - 25 GHz	24243.07	-51.89	-20	Pass

SPURIOUS CONDUCTED EMISSIONS

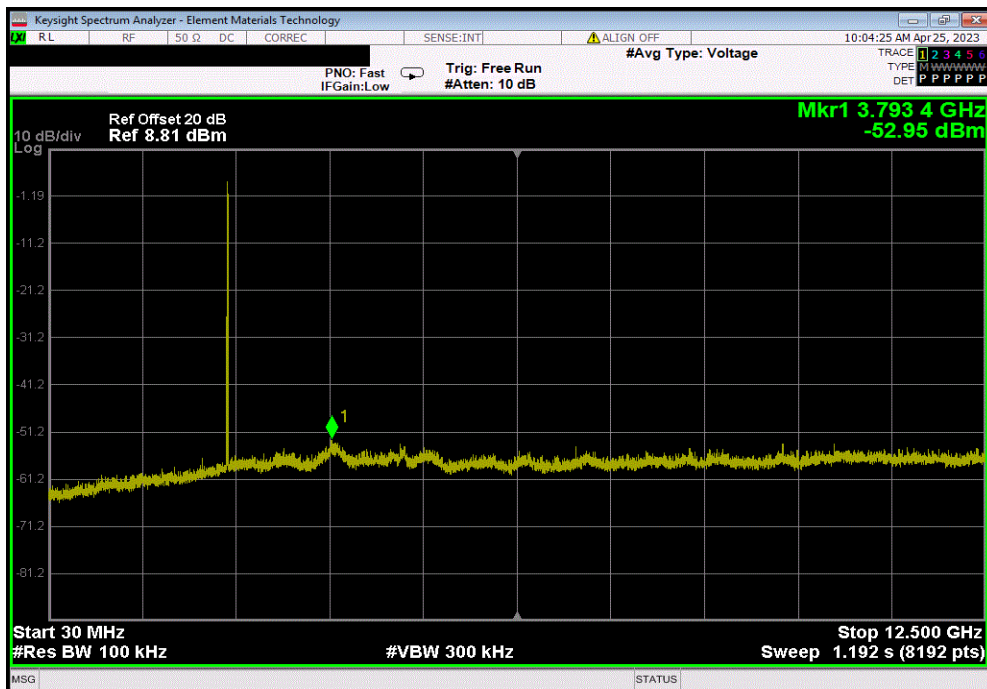


TbTx 2022.06.03.0 XMI 2023.02.14.0

BLE/GFSK 1 Mbps Low Channel, 2402 MHz					
Frequency Range	Measured Freq (MHz)	Max Value (dBc)	Limit ≤ (dBc)	Result	
Fundamental	2402	N/A	N/A	N/A	



BLE/GFSK 1 Mbps Low Channel, 2402 MHz					
Frequency Range	Measured Freq (MHz)	Max Value (dBc)	Limit ≤ (dBc)	Result	
30 MHz - 12.5 GHz	3793.38	-55.46	-20	Pass	

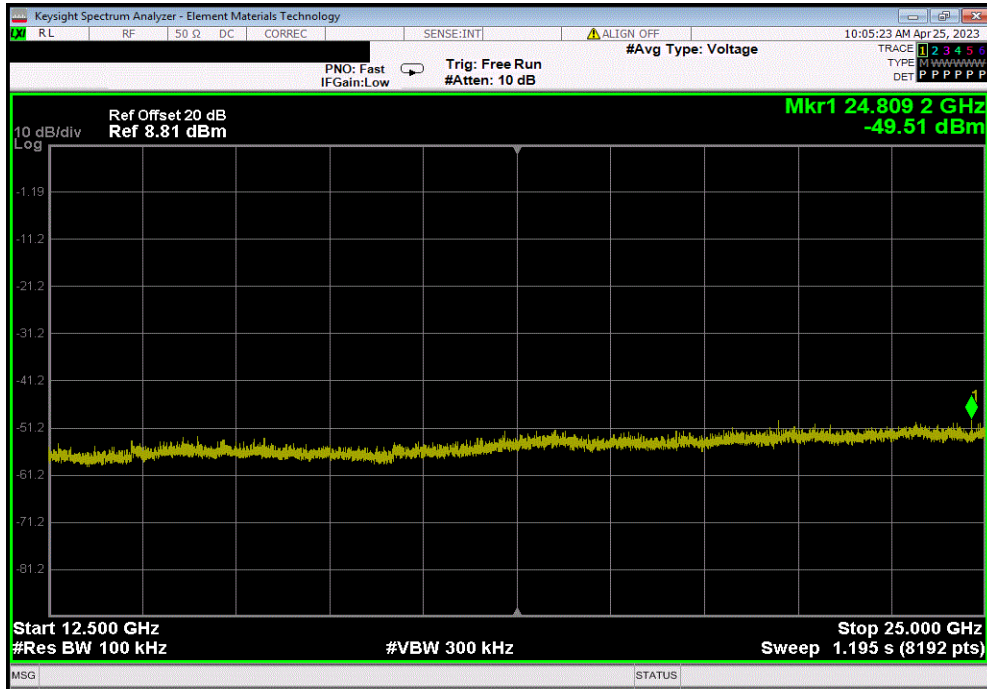


SPURIOUS CONDUCTED EMISSIONS

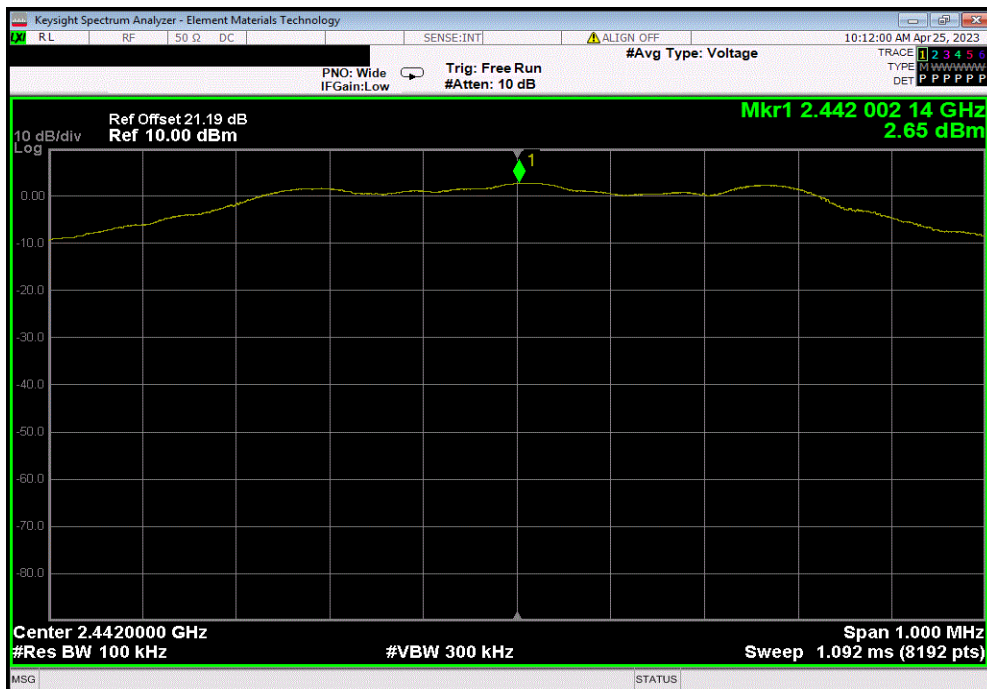


TbTx 2022.06.03.0 XMI 2023.02.14.0

BLE/GFSK 1 Mbps Low Channel, 2402 MHz					
Frequency Range	Measured Freq (MHz)	Max Value (dBc)	Limit ≤ (dBc)	Result	
12.5 GHz - 25 GHz	24809.24	-52.02	-20	Pass	



BLE/GFSK 1 Mbps Mid Channel, 2442 MHz					
Frequency Range	Measured Freq (MHz)	Max Value (dBc)	Limit ≤ (dBc)	Result	
Fundamental	2442	N/A	N/A	N/A	

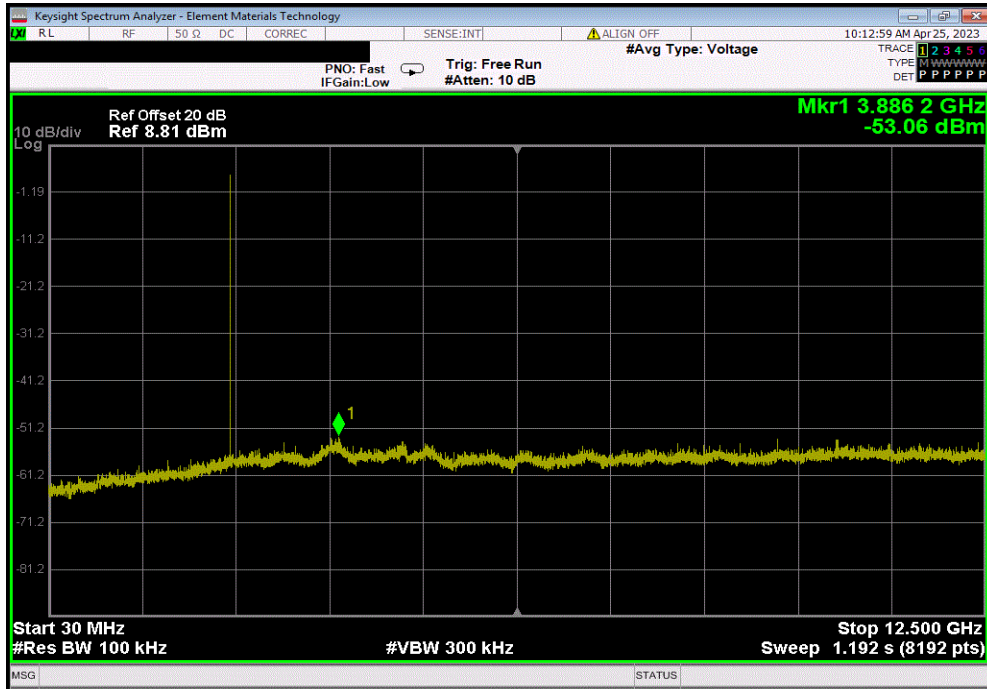


SPURIOUS CONDUCTED EMISSIONS

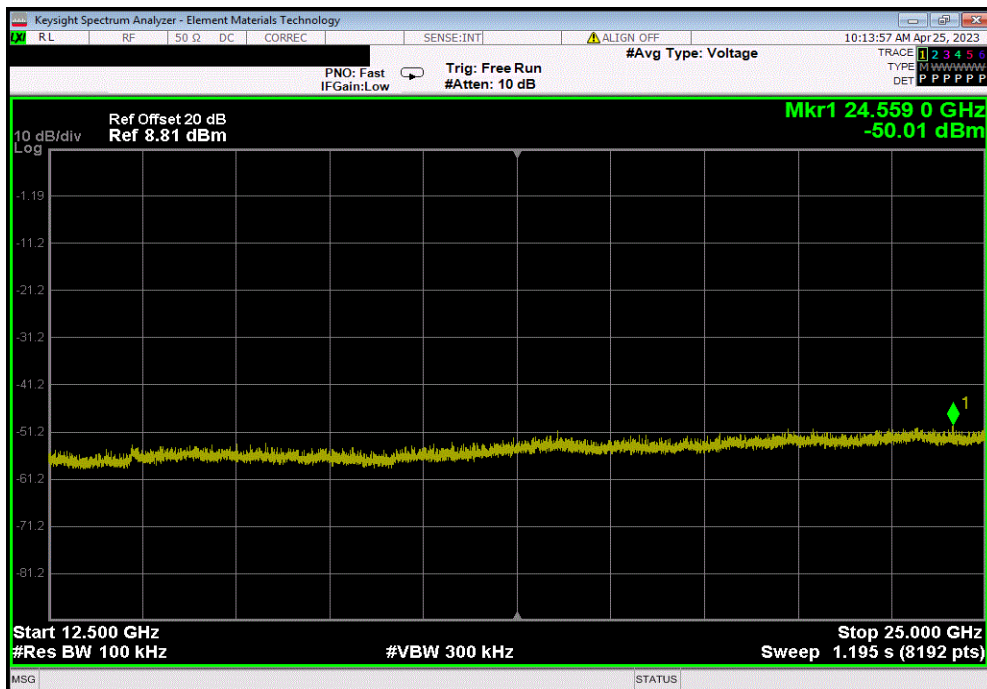


TbTx 2022.06.03.0 XMI 2023.02.14.0

BLE/GFSK 1 Mbps Mid Channel, 2442 MHz				
Frequency Range	Measured Freq (MHz)	Max Value (dBc)	Limit ≤ (dBc)	Result
30 MHz - 12.5 GHz	3886.25	-55.71	-20	Pass



BLE/GFSK 1 Mbps Mid Channel, 2442 MHz				
Frequency Range	Measured Freq (MHz)	Max Value (dBc)	Limit ≤ (dBc)	Result
12.5 GHz - 25 GHz	24558.97	-52.66	-20	Pass

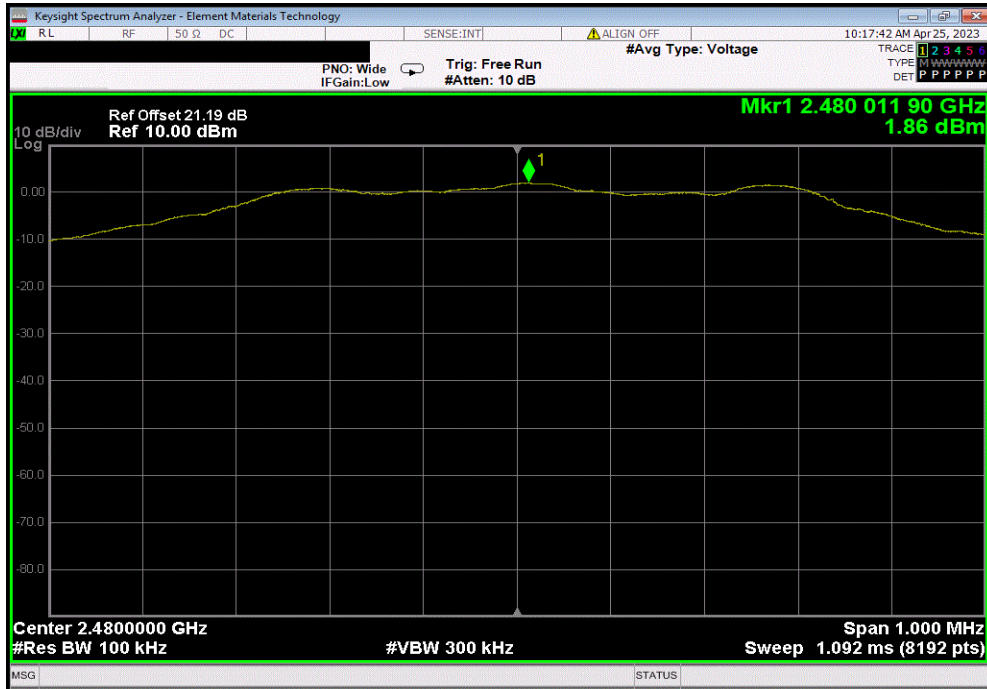


SPURIOUS CONDUCTED EMISSIONS

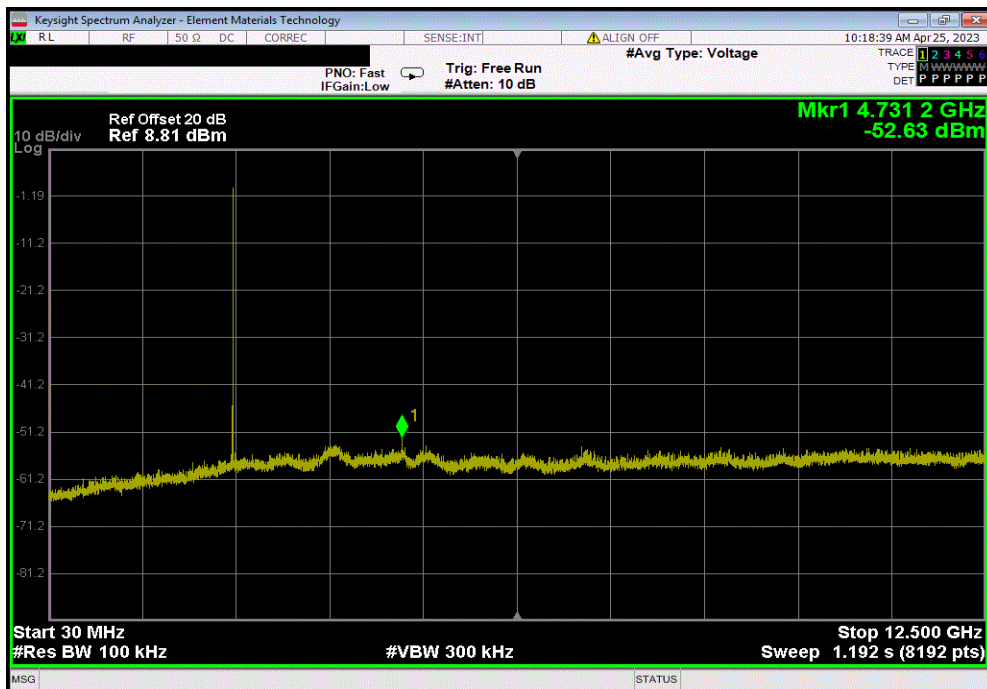


TbTx 2022.06.03.0 XMI 2023.02.14.0

BLE/GFSK 1 Mbps High Channel, 2480 MHz						
Frequency Range	Measured Freq (MHz)	Max Value (dBc)	Limit ≤ (dBc)	Result		
Fundamental	2480.01	N/A	N/A	N/A		



BLE/GFSK 1 Mbps High Channel, 2480 MHz						
Frequency Range	Measured Freq (MHz)	Max Value (dBc)	Limit ≤ (dBc)	Result		
30 MHz - 12.5 GHz	4731.18	-54.49	-20	Pass		

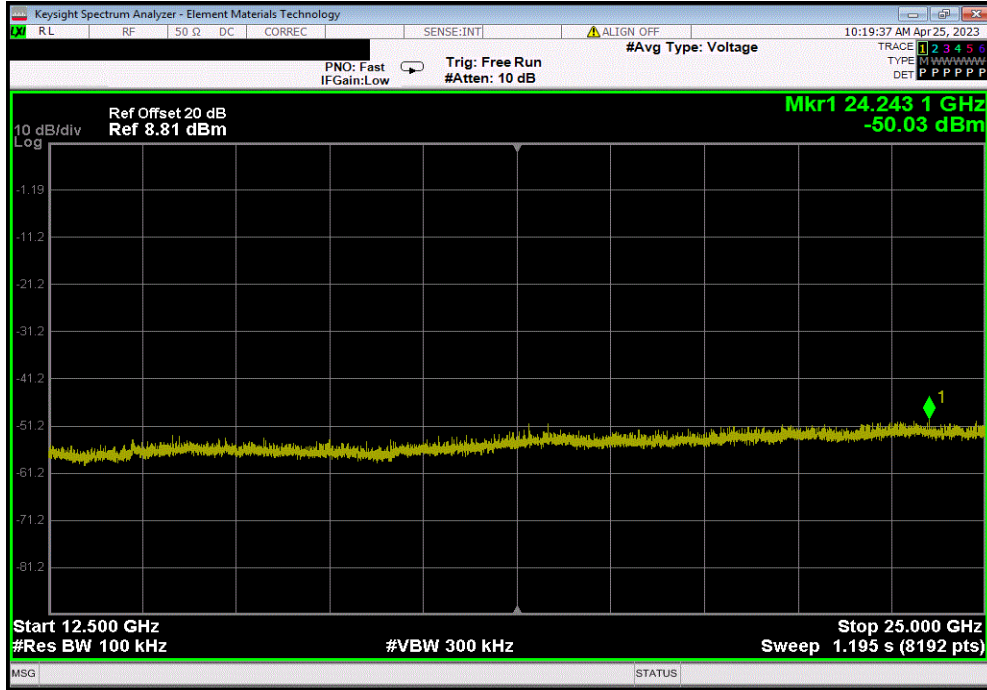


SPURIOUS CONDUCTED EMISSIONS



TbTx 2022.06.03.0 XMI 2023.02.14.0

BLE/GFSK 1 Mbps High Channel, 2480 MHz				
Frequency Range	Measured Freq (MHz)	Max Value (dBc)	Limit ≤ (dBc)	Result
12.5 GHz - 25 GHz	24243.07	-51.89	-20	Pass



SPURIOUS RADIATED EMISSIONS



TEST DESCRIPTION

Using the mode of operation and configuration noted within this report, a final radiated emissions test was performed. The frequency range investigated (scanned), is also noted in this report. Radiated emissions measurements were made at the EUT azimuth and antenna height such that the maximum radiated emissions level was detected. This required the use of a turntable and an antenna positioner. The preferred method of a continuous azimuth search was utilized for frequency scans of the EUT field strength with both polarities of the measuring antenna. A calibrated, linearly polarized antenna was positioned at the specified distance from the periphery of the EUT. Tests were made with the antenna positioned in both the horizontal and vertical planes of polarization. The antenna was varied in height above the conducting ground plane to obtain the maximum signal strength. Though specified in the report, the measurement distance was 3 meters or 10 meters (from antenna to boundary of EUT). At any measurement distance, the antenna height was varied from 1 meter to 4 meters. These height scans apply for both horizontal and vertical polarization, except that for vertical polarization the minimum height of the center of the antenna was increased so that the lowest point of the bottom of the antenna cleared the ground surface by at least 25 cm.

The EUT arrangement is configured as equivalent to that occurring in normal use. Tabletop equipment is placed on a 0.8 meter high non-conductive table & for Floor-standing equipment; it is placed on, but insulated from a ground reference plane by the use of its own rollers or stand-off supports. If measurements above 1 GHz were required, the test setup was modified to meet the regulatory requirements for higher frequency measurements. If required, RF absorber was placed on the floor between the measurement antenna and EUT. If required, per the standard, an insulating material was also added to ground plane between the EUT's power and remote I/O cables.

The diameter of the illumination area is the dimension of the line tangent to the EUT formed by 3 dB beamwidth of the measurement antenna at the measurement distance. At a 3 meter test distance, the diameter of the illumination area was 3.8 meters at 1 GHz and greater than 2.1 meters up to 6 GHz. Above 1 GHz, when required by the measurement standard, the antenna is pointed for both azimuth and elevation to maintain the receive antenna within the cone of radiation from the EUT. The specified measurement detectors were used for comparison of the emissions to the peak and average specification limits.

The test data represents the configuration / operating mode/ model that produced the highest emission levels as compared to the specification limit.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Antenna - Standard Gain	ETS Lindgren	3160-08	AJG	NCR	NCR
Antenna - Standard Gain	ETS Lindgren	3160-07	AJF	NCR	NCR
Antenna - Double Ridge	ETS Lindgren	3115	AJL	2022-10-21	2024-10-21
Attenuator	Weinschel Corp	4H-20	AWB	2023-02-13	2024-02-13
Antenna - Biconilog	ETS Lindgren	3143B	AYF	2022-09-02	2024-09-02
Filter - High Pass	Micro-Tronics	HPM50111	HGC	2022-02-23	2023-02-23
Filter - High Pass	Micro-Tronics	HPM50108	HGD	2022-09-09	2023-09-09
Filter - Low Pass	Micro-Tronics	LPM50004	HHV	2022-07-22	2023-07-22
Amplifier - Pre-Amplifier	Miteq	JSDWK42-18004000-60-5P	PAM	2022-09-14	2023-09-14
Amplifier - Pre-Amplifier	Miteq	AMF-6F-12001800-30-10P	PAL	2022-09-09	2023-09-09
Amplifier - Pre-Amplifier	Miteq	AMF-6F-08001200-30-10P	PAK	2022-09-09	2023-09-09
Amplifier - Pre-Amplifier	Fairview Microwave	FMAM63001	PAS	2022-04-19	2023-04-19
Amplifier - Pre-Amplifier	Miteq	AMF-3D-00100800-32-13P	PAJ	2022-04-19	2023-04-19
Cable	Northwest EMC	18-40GHz	TXE	2022-09-09	2023-09-09
Cable	Northwest EMC	8-18GHz	TXD	2022-04-12	2023-04-12
Cable	Northwest EMC	1-8.2 GHz	TXC	2022-04-19	2023-04-19
Cable	Northwest EMC	RE 9kHz - 1GHz	TXB	2022-06-10	2023-06-10
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFN	2022-01-19	2023-01-19

MEASUREMENT UNCERTAINTY

Description		
Expanded k=2	5.1 dB	-5.1 dB

SPURIOUS RADIATED EMISSIONS



FREQUENCY RANGE INVESTIGATED

30 MHz TO 40000 MHz

POWER INVESTIGATED

Battery

CONFIGURATIONS INVESTIGATED

WTVD0086-1

MODES INVESTIGATED

Transmitting at Low Channel (2402 MHz), Mid Channel (2442 MHz) and High Channel (2480 Mhz).

SPURIOUS RADIATED EMISSIONS



EUT:	V700	Work Order:	WTVD0086
Serial Number:	BWL7-000539	Date:	2022-12-22
Customer:	Motorola Solutions Inc.	Temperature:	20.5°C
Attendees:	Navaid Karimi	Relative Humidity:	17.8%
Customer Project:	None	Bar. Pressure (PMSL):	1031 mb
Tested By:	Marty Martin	Job Site:	TX02
Power:	Battery	Configuration:	WTVD0086-1

TEST SPECIFICATIONS

Specification:	Method:
FCC 15.247:2022	ANSI C63.10:2013
RSS-247 Issue 2:2017	ANSI C63.10:2013
RSS-Gen Issue 5:2018+A1:2019+A2:2021	ANSI C63.10:2013

TEST PARAMETERS

Run #:	47	Test Distance (m):	3	Ant. Height(s) (m):	1 to 4(m)
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COMMENTS

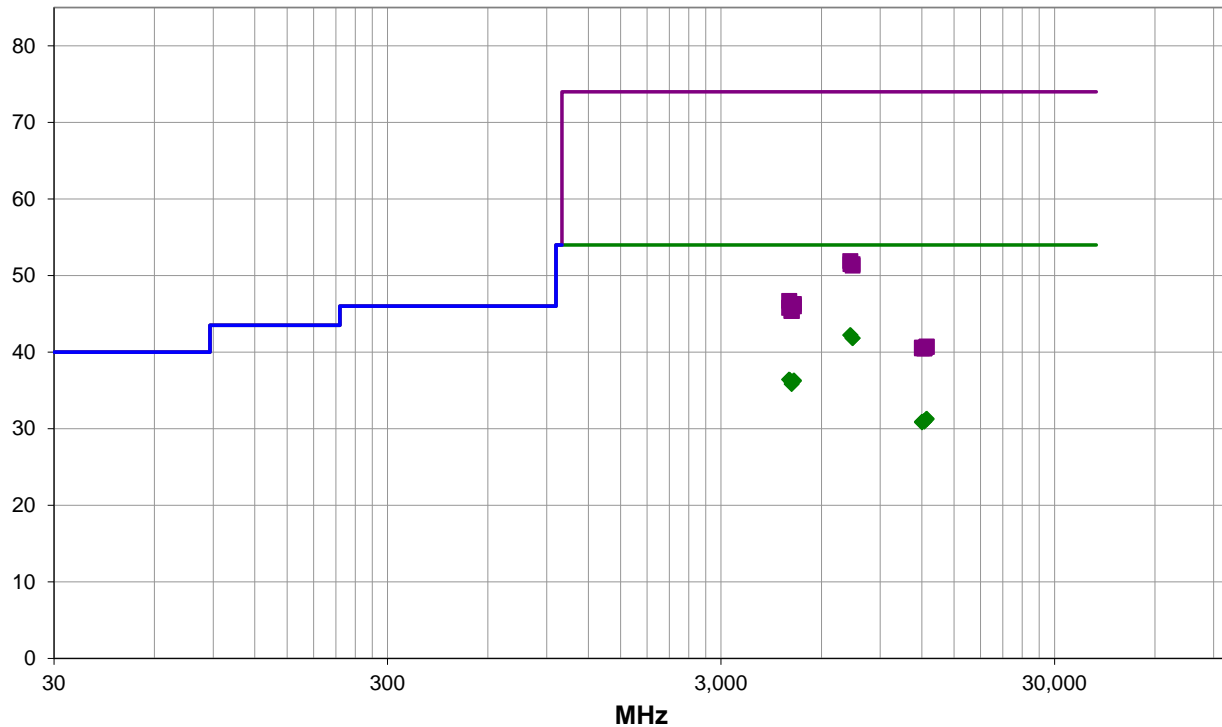
EUT fully operational and Transmitting, see table for details.

EUT OPERATING MODES

Transmitting at Low Channel (2402 MHz), Mid Channel (2442 MHz) and High Channel (2480 Mhz).

DEVIATIONS FROM TEST STANDARD

None



Run #: 47

■ PK ◆ AV ● QP

SPURIOUS RADIATED EMISSIONS



RESULTS - Run #47

Freq (MHz)	Amplitude (dBuV)	Factor (dB/m)	Antenna Height (meters)	Azimuth (degrees)	Duty Cycle Correction Factor (dB)	External Attenuation (dB)	Polarity/Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)	Comments
7326.175	29.0	11.3	1.5	230.0	1.9	0.0	Horz	AV	0.0	42.2	54.0	-11.8	Mid Ch, EUT Vert, BLE
7325.502	29.0	11.3	1.5	265.0	1.9	0.0	Vert	AV	0.0	42.2	54.0	-11.8	Mid Ch, EUT Vert, BLE
7439.713	28.5	11.4	2.8	261.0	1.9	0.0	Horz	AV	0.0	41.8	54.0	-12.2	High Ch, EUT Vert, BLE
7439.670	28.5	11.4	1.5	307.0	1.9	0.0	Vert	AV	0.0	41.8	54.0	-12.2	High Ch, EUT Vert, BLE
4803.517	29.4	5.1	1.5	49.0	1.9	0.0	Horz	AV	0.0	36.4	54.0	-17.6	Low Ch, EUT Vert, BLE
4803.762	29.4	5.1	1.5	213.0	1.9	0.0	Vert	AV	0.0	36.4	54.0	-17.6	Low Ch, EUT Vert, BLE
4959.940	29.5	4.9	1.5	261.9	1.9	0.0	Vert	AV	0.0	36.3	54.0	-17.7	High Ch, EUT Vert, BLE
4960.075	29.4	4.9	2.5	31.0	1.9	0.0	Horz	AV	0.0	36.2	54.0	-17.8	High Ch, EUT Vert, BLE
4883.610	29.1	5.0	1.5	262.9	1.9	0.0	Vert	AV	0.0	36.0	54.0	-18.0	Mid Ch, EUT Vert, BLE
4883.533	28.9	5.0	1.5	192.0	1.9	0.0	Horz	AV	0.0	35.8	54.0	-18.2	Mid Ch, EUT Vert, BLE
7325.533	40.6	11.3	1.5	265.0	0.0	0.0	Vert	PK	0.0	51.9	74.0	-22.1	Mid Ch, EUT Vert, BLE
7439.668	40.1	11.4	1.5	307.0	0.0	0.0	Vert	PK	0.0	51.5	74.0	-22.5	High Ch, EUT Vert, BLE
7326.415	40.2	11.3	1.5	230.0	0.0	0.0	Horz	PK	0.0	51.5	74.0	-22.5	Mid Ch, EUT Vert, BLE
12399.830	32.1	-2.7	1.5	264.0	1.9	0.0	Horz	AV	0.0	31.3	54.0	-22.7	High Ch, EUT Vert, BLE
7439.727	39.9	11.4	2.8	261.0	0.0	0.0	Horz	PK	0.0	51.3	74.0	-22.7	High Ch, EUT Vert, BLE
12399.760	32.0	-2.7	1.5	254.0	1.9	0.0	Vert	AV	0.0	31.2	54.0	-22.8	High Ch, EUT Vert, BLE
12210.100	32.4	-3.3	1.5	116.0	1.9	0.0	Vert	AV	0.0	31.0	54.0	-23.0	Mid Ch, EUT Vert, BLE
12010.090	33.4	-4.4	1.5	255.0	1.9	0.0	Horz	AV	0.0	30.9	54.0	-23.1	Low Ch, EUT Vert, BLE
12209.840	32.3	-3.3	1.5	142.9	1.9	0.0	Horz	AV	0.0	30.9	54.0	-23.1	Mid Ch, EUT Vert, BLE
12010.480	33.3	-4.4	1.5	301.0	1.9	0.0	Vert	AV	0.0	30.8	54.0	-23.2	Low Ch, EUT Vert, BLE
4803.777	41.6	5.1	1.5	213.0	0.0	0.0	Vert	PK	0.0	46.7	74.0	-27.3	Low Ch, EUT Vert, BLE
4959.870	41.4	4.9	2.5	31.0	0.0	0.0	Horz	PK	0.0	46.3	74.0	-27.7	High Ch, EUT Vert, BLE
4959.885	41.1	4.9	1.5	261.9	0.0	0.0	Vert	PK	0.0	46.0	74.0	-28.0	High Ch, EUT Vert, BLE
4804.045	40.7	5.1	1.5	49.0	0.0	0.0	Horz	PK	0.0	45.8	74.0	-28.2	Low Ch, EUT Vert, BLE
4884.062	40.4	5.0	1.5	192.0	0.0	0.0	Horz	PK	0.0	45.4	74.0	-28.6	Mid Ch, EUT Vert, BLE
4883.890	40.4	5.0	1.5	262.9	0.0	0.0	Vert	PK	0.0	45.4	74.0	-28.6	Mid Ch, EUT Vert, BLE
12399.840	43.4	-2.7	1.5	264.0	0.0	0.0	Horz	PK	0.0	40.7	74.0	-33.3	High Ch, EUT Vert, BLE
12399.930	43.4	-2.7	1.5	254.0	0.0	0.0	Vert	PK	0.0	40.7	74.0	-33.3	High Ch, EUT Vert, BLE
12009.540	45.0	-4.4	1.5	255.0	0.0	0.0	Horz	PK	0.0	40.6	74.0	-33.4	Low Ch, EUT Vert, BLE
12009.550	44.9	-4.4	1.5	301.0	0.0	0.0	Vert	PK	0.0	40.5	74.0	-33.5	Low Ch, EUT Vert, BLE
12209.830	43.8	-3.3	1.5	142.9	0.0	0.0	Horz	PK	0.0	40.5	74.0	-33.5	Mid Ch, EUT Vert, BLE
12210.170	43.8	-3.3	1.5	116.0	0.0	0.0	Vert	PK	0.0	40.5	74.0	-33.5	Mid Ch, EUT Vert, BLE

CONCLUSION

Pass

Tested By

SPURIOUS RADIATED EMISSIONS



EUT:	V700	Work Order:	WTVD0086
Serial Number:	BWL7-000539	Date:	2022-12-22
Customer:	Motorola Solutions Inc.	Temperature:	20.5°C
Attendees:	Navaid Karimi	Relative Humidity:	17.8%
Customer Project:	None	Bar. Pressure (PMSL):	1031 mb
Tested By:	Marty Martin	Job Site:	TX02
Power:	Battery	Configuration:	WTVD0086-1

TEST SPECIFICATIONS

Specification:	Method:
FCC 15.247:2022	ANSI C63.10:2013
RSS-247 Issue 2:2017	ANSI C63.10:2013
RSS-Gen Issue 5:2018+A1:2019+A2:2021	ANSI C63.10:2013

TEST PARAMETERS

Run #:	49	Test Distance (m):	3	Ant. Height(s) (m):	1 to 4(m)
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COMMENTS

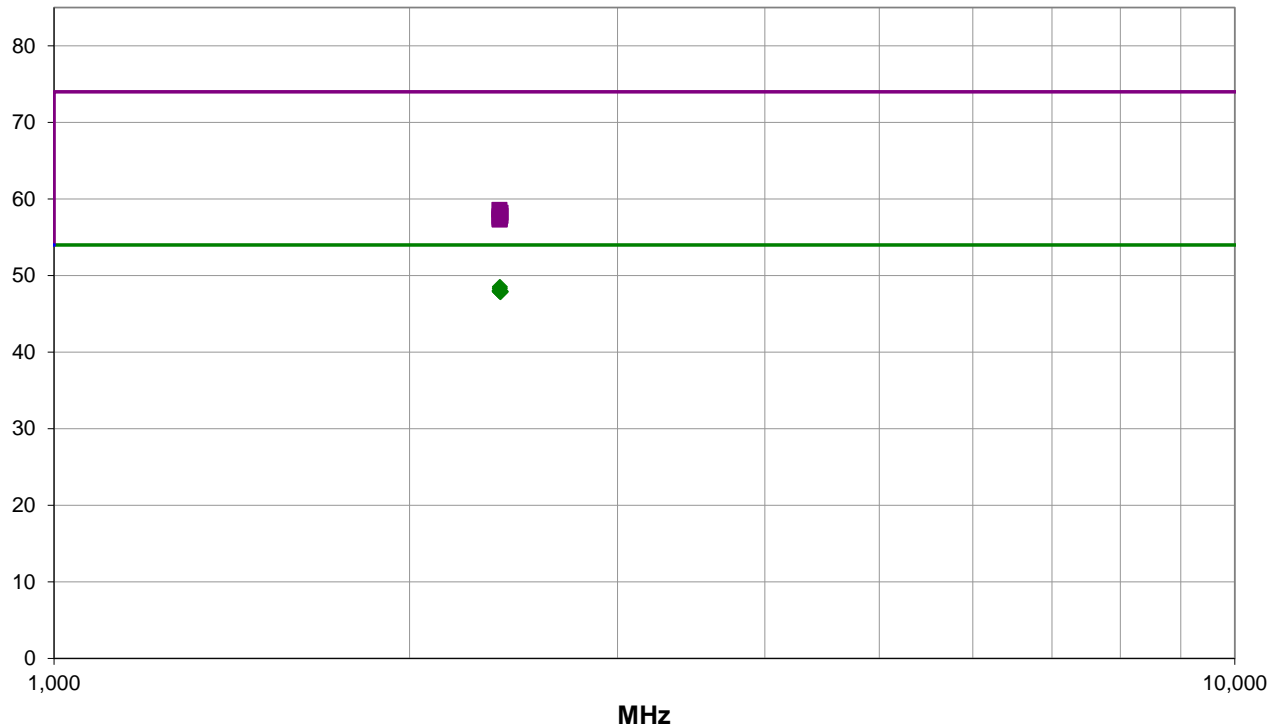
EUT fully operational and Transmitting, see table for BLE Band edge details.

EUT OPERATING MODES

Transmitting at Low Channel (2402 MHz), Mid Channel (2442 MHz) and High Channel (2480 MHz).

DEVIATIONS FROM TEST STANDARD

None



Run #: 49

■ PK ◆ AV ● QP

SPURIOUS RADIATED EMISSIONS

RESULTS - Run #49

Freq (MHz)	Amplitude (dBuV)	Factor (dB/m)	Antenna Height (meters)	Azimuth (degrees)	Duty Cycle Correction Factor (dB)	External Attenuation (dB)	Polarity/Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)	Comments
2385.357	33.0	-6.4	1.5	94.9	1.9	20.0	Horz	AV	0.0	48.5	54.0	-5.5	High Ch, EUT Vert, BLE
2385.140	32.8	-6.4	1.5	243.0	1.9	20.0	Vert	AV	0.0	48.3	54.0	-5.7	High Ch, EUT Vert, BLE
2384.793	32.5	-6.4	1.5	122.0	1.9	20.0	Horz	AV	0.0	48.0	54.0	-6.0	High Ch, EUT Horz, BLE
2384.713	32.5	-6.4	1.5	222.0	1.9	20.0	Vert	AV	0.0	48.0	54.0	-6.0	High Ch, EUT Horz, BLE
2384.823	32.4	-6.4	1.5	303.0	1.9	20.0	Horz	AV	0.0	47.9	54.0	-6.1	High Ch, EUT on Side, BLE
2385.280	32.4	-6.4	1.5	339.9	1.9	20.0	Vert	AV	0.0	47.9	54.0	-6.1	High Ch, EUT on Side, BLE
2389.873	32.4	-6.4	1.5	94.9	1.9	20.0	Vert	AV	0.0	47.9	54.0	-6.1	Low Ch, EUT Vert, BLE
2388.133	32.3	-6.4	1.5	94.9	1.9	20.0	Horz	AV	0.0	47.8	54.0	-6.2	Low Ch, EUT Vert, BLE
2383.523	45.0	-6.4	1.5	94.9	0.0	20.0	Horz	PK	0.0	58.6	74.0	-15.4	High Ch, EUT Vert, BLE
2389.140	44.6	-6.4	1.5	94.9	0.0	20.0	Horz	PK	0.0	58.2	74.0	-15.8	Low Ch, EUT Vert, BLE
2384.423	44.2	-6.4	1.5	243.0	0.0	20.0	Vert	PK	0.0	57.8	74.0	-16.2	High Ch, EUT Vert, BLE
2388.677	44.2	-6.4	1.5	94.9	0.0	20.0	Vert	PK	0.0	57.8	74.0	-16.2	Low Ch, EUT Vert, BLE
2384.953	44.1	-6.4	1.5	222.0	0.0	20.0	Vert	PK	0.0	57.7	74.0	-16.3	High Ch, EUT Horz, BLE
2384.607	44.0	-6.4	1.5	339.9	0.0	20.0	Vert	PK	0.0	57.6	74.0	-16.4	High Ch, EUT on Side, BLE
2384.490	43.8	-6.4	1.5	122.0	0.0	20.0	Horz	PK	0.0	57.4	74.0	-16.6	High Ch, EUT Horz, BLE
2384.370	43.7	-6.4	1.5	303.0	0.0	20.0	Horz	PK	0.0	57.3	74.0	-16.7	High Ch, EUT on Side, BLE

CONCLUSION

Pass



Tested By

End of Test Report